ELECTRICAL LEGEND

(LEGEND IS GENERAL IN NATURE. NOT ALL OF THE SYMBOLS SHOWN ARE USED IN THIS PROJECT.)

DEVICES

- SINGLE CONVENIENCE OUTLET, +18" AFF UNO
- DUPLEX CONVENIENCE OUTLET, +18" AFF UNO
- DUPLEX CONVENIENCE OUTLET, +18" AFF UNO WITH GROUND FAULT INTERRUPTION PROTECTION
- GFCI WEATHER PROOF RECEPTACLE WITH HEAVY DUTY IN-USE COVER
- DUPLEX CONVENIENCE OUTLET, MOUNTED ABOVE COUNTER UNO WITH GROUND FAULT INTERRUPTION PROTECTION
- DUPLEX CONVENIENCE OUTLET, MOUNTED ABOVE COUNTER UNO
- DUPLEX CONVENIENCE OUTLET, WITH INTEGRATED USB CHARGING OUTLET, +18" AFF UNO
- DUPLEX CONVENIENCE OUTLET, WITH INTEGRATED USB CHARGING OUTLET, +18" AFF UNO WITH GROUND FAULT INTERRUPTION PROTECTION
- SWITCHED DUPLEX CONVENIENCE OUTLET, +18" AFF UNO
- FOURPLEX CONVENIENCE OUTLET. +18" AFF UNO
- FOURPLEX CONVENIENCE OUTLET. MOUNTED ABOVE COUNTER UNO
- DUPLEX 20A RECEPTACLE, +18" AFF UNO
- DUPLEX 20A RECEPTACLE, MOUNTED ABOVE COUNTER UNO
- SINGLE 20A RECEPTACLE, +18" AFF UNO
- CONNECTION POINT TO EQUIPMENT SPECIFIED, FURNISHED, AND INSTALLED UNDER OTHER SECTIONS. ELECTRICAL CONTRACTOR TO SUPPLY RACEWAY AND CONDUCTORS AND MAKE FINAL CONNECTION TO EQUIPMENT UNDER THIS SECTION. UNO.
- SPECIAL PURPOSE RECEPTACLE/DEVICE, VERIFY SIZE AND TYPE WITH EQUIPMENT SUPPLIER
- WAP WIRELESS ACCESS POINT
- JUNCTION BOX
- WALL MOUNTED JUNCTION BOX
- WALL MOUNTED PUSHBUTTON, MOUNT AT SWITCH HEIGHT UNO
- MOTOR STARTER/CONTACTOR – FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR U.N.O.
- COMBINATION STARTER AND DISCONNECT
- NON-FUSED DISCONNECT SWITCH, SIZE AS INDICATED, NEMA 1 UNO, 2 POLE UNO
- FU X/X/X FUSED DISCONNECT SWITCH, SIZE AS INDICATED, NEMA 1 UNO, 2 POLE UNO
- T X THERMOSTAT, UNIT CONTROLLED INDICATED
- H X HUMIDISTAT, UNIT CONTROLLED INDICATED
- OCCUPANCY SENSOR
- PP POWER PACK
- M MOTOR, SIZE AS INDICATED
- MECHANICAL EQUIPMENT SYMBOL (RE: MECHANICAL DRAWINGS FOR EXACT LOCATION OF UNITS)
- PHASE / VOLTAGE / HORSEPOWER
- SURFACE MOUNTED PANELBOARD. SEE SCHED. FOR TYPE.
- FLUSH MOUNTED PANELBOARD. SEE SCHED. FOR TYPE.
- SURFACE MOUNTED FIRE ALARM PANELBOARD.
- FLUSH MOUNTED FIRE ALARM PANELBOARD.
- LT LOW VOLTAGE TRANSFORMER
- HC DOOR CHIME
- BATHROOM EXHAUST FAN

ONE LINE

- DELTA WYE TRANSFORMER, U.N.O.
- CURRENT TRANSFORMER
- BRANCH PANEL — BRANCH PANEL
- 30A — INTERRUPTER SWITCH, SIZE AS INDICATED, 3 POLE, UNO.
- 30AS / 30AF — FUSED SWITCH, SWITCH SIZE (AS) & FUSE SIZE (FS) AS INDICATED, 3 POLE, UNO.
- INDIVIDUAL BREAKER FRAME (AF) SIZE AND TRIP PLUG RATING (AT), NEMA 1 UNO, 3 POLE UNO.
- TVSS — TRANSIENT VOLTAGE SURGE SUPPRESSION
- ST — SHUNT TRIP COIL
- OVERHEAD SERVICE DROP
- METER AND BASE
- NEUTRAL — NEUTRAL
- PAD MOUNT TRANSFORMER

EXISTING EQUIPMENT SHOWN DASHED

FIRE ALARM

- SD — SMOKE DETECTOR, MULTIPLE STATION, INTERCONNECTABLE W/ BATTERY BACKUP, CEILING MOUNTED UNO
- SD CO — SMOKE/CARBON MONOXIDE COMBINATION DETECTOR, MULTIPLE STATION, INTERCONNECTABLE W/BATTERY BACKUP, CEILING MOUNTED UNO
- SD S — SMOKE/STROBE COMBINATION DETECTOR, MULTIPLE STATION, INTERCONNECTABLE W/BATTERY BACKUP, CEILING MOUNTED UNO
- H — HEAT DETECTOR, MULTIPLE STATION, CEILING MOUNTED UNO, ADDRESSABLE
- IC — WIRELESS INTERCOM
- MI — WIRELESS PAGING BASE STATION
- MF — PULLSTATION, +44" AFF
- HF — FIRE ALARM HORN, +90" AFF UNO
- HF — FIRE ALARM STROBE, +90" AFF TO BOTTOM OF DEVICE, UNO, STROBE INTENSITY INDICATED
- HF — FIRE ALARM SPEAKER STROBE, +90" AFF TO BOTTOM OF DEVICE, UNO
- HF 15 — FIRE ALARM HORN/STROBE +90" AFF TO BOTTOM OF DEVICE, UNO, STROBE INTENSITY INDICATED
- HF — FIRE ALARM BELL, +90" AFF UNO
- HF 15 — FIRE ALARM MULTI HORN, +90" AFF UNO
- CEILING MOUNTED FIRE ALARM STROBE
- CEILING MOUNTED FIRE ALARM HORN STROBE
- CEILING MOUNTED FIRE ALARM SPEAKER STROBE
- FS — FLOW SWITCH
- TS — TAMPER SWITCH
- PS — PRESSURE SWITCH
- RA — REMOTE ANNUNCIATOR
- FACP — FIRE ALARM CONTROL PANEL
- F — FIRE/SMOKE DAMPER – PROVIDE REMOTE INDICATOR WHERE REQUIRED. PROVIDE LINE VOLTAGE CONNECTION WHERE REQUIRED. PROVIDE ALL NECESSARY COMPONENTS TO CONNECT TO THE FIRE ALARM SYSTEM.
- F — FIRE ALARM SYSTEM SMOKE DETECTOR, ADDRESSABLE
- F DEM — FIRE ALARM SYSTEM SMOKE DETECTOR, TO BE DEMO'D
- F D — DUCT FIRE ALARM SMOKE DETECTOR COORDINATE REQUIREMENTS WITH MECHANICAL CONTRACTOR. WIRE TO UNIT FOR FAN SHUT-DOWN. CONNECT TO FIRE ALARM SYSTEM. PROVIDE REMOTE INDICATOR TEST SWITCH WHERE REQUIRED. PROVIDE 120V POWER FROM THE NEAREST CIRCUIT U.N.O.
- ASD — ASPIRATING SMOKE DETECTOR CONTROLLER
- LHD — LINEAR HEAT DETECTOR CONTROLLER
- M — ADDRESSABLE MONITOR MODULE
- R — ADDRESSABLE RELAY MODULE
- ATS — AUTOMATIC TRANSFER SWITCH
- XFMR — TRANSFORMER
- VFD — VARIABLE FREQUENCY DRIVE
- MIC — MICROPHONE
- WIRELESS SPEAKER
- R — CONTROL RELAY

CIRCUITING SYMBOLS

- —R— SURFACE RACEWAY
- CONDUIT UP
- CONDUIT STUBBED, CAPPED, AND MARKED WITH PULL CORD
- CONDUIT DOWN
- X–# SINGLE CIRCUIT PANEL HOMERUN, PANEL AND CIRCUIT AS INDICATED
- X–#,# DOUBLE CIRCUIT PANEL HOMERUN, PANEL AND CIRCUITS AS INDICATED
- X–#,#,# TRIPLE CIRCUIT PANEL HOMERUN, PANEL AND CIRCUITS AS INDICATED
- X–#,#,#,# QUADRUPLE CIRCUIT PANEL HOMERUN, PANEL AND CIRCUITS AS INDICATED
- RACEWAY SIZE: 3/4"C, 3#12, 1#12G — GROUNDING CONDUCTOR SIZE; CONDUCTOR SIZE; CONDUCTOR QUANTITY
- 6 — BEGINNING OF INDIVIDUAL CIRCUIT, CIRCUIT NUMBER INDICATED
- CONDUCTOR INFORMATION
- CURRENT CARRYING CONDUCTORS
- NEUTRAL
- GROUNDING CONDUCTOR
- ISOLATED GROUND
- CIRCUIT CONCEALED IN CEILING OR WALL 1/2"-2#12,1#12G UNO
- EXISTING CIRCUIT
- CIRCUIT CONCEALED IN FLOOR OR UNDERGROUND

EXISTING EQUIPMENT SHOWN DASHED

ELECTRICAL SPECIFICATIONS

PART 1 - GENERAL

1.1 SCOPE OF WORK

FURNISH AND INSTALL ALL MATERIALS AND EQUIPMENT AND PROVIDE ALL LABOR REQUIRED AND NECESSARY TO COMPLETE THE WORK SHOWN ON THE DRAWINGS AND ALL OTHER WORK AND MISCELLANEOUS ITEMS, NOT SPECIFICALLY MENTIONED, BUT REASONABLY INFERRED FOR A COMPLETE INSTALLATION, INCLUDING ALL ACCESSORIES AND APPURTENANCES REQUIRED FOR TESTING THE SYSTEM. IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS THAT ALL SYSTEMS BE COMPLETE AND READY FOR OPERATION. PROVIDE ANY NECESSARY ELECTRICAL WORK REQUIRED FOR PHASING OR SEQUENCING OF CONSTRUCTION. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR TEMPORARY CONSTRUCTION POWER AND LIGHTING AS NEEDED. THE ELECTRICAL CONTRACTOR SHALL REVIEW AND BE RESPONSIBLE FOR, ANY ELECTRICAL WORK ON ANY SHEET OF THE PROJECT PLANS SHEETS WHETHER IT IS ON THE ELECTRICAL SHEETS OR NOT.

PLANS AND SPECIFICATIONS ARE TO BE TAKEN AS ONE DOCUMENT. ITEMS INCLUDED IN ONE AND NOT IN THE OTHER SHALL BE CONSIDERED AS IF IN BOTH. WHERE A CONFLICT EXISTS BETWEEN PLANS AND SPECIFICATIONS THE MORE STRINGENT REQUIREMENT SHALL PREVAIL.

1.2 CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL COMPLY WITH LATEST RULES, CODES AND REGULATIONS, INCLUDING, BUT NOT LIMITED TO OSHA, THE NATIONAL ELECTRICAL CODE, INTERNATIONAL BUILDING AND FIRE CODES, NFPA, AND OTHER APPLICABLE STATE AND LOCAL LAWS AND REGULATIONS. CODE COMPLIANCE IS MANDATORY. NOTHING IN THESE DRAWINGS AND SPECIFICATIONS PERMITS WORK NOT CONFORMING TO THESE CODES. WHERE WORK IS SHOWN TO EXCEED MINIMUM CODE REQUIREMENTS, COMPLY WITH DRAWINGS AND SPECIFICATIONS.

1.3 LICENSE, FEES AND PERMITS

ARRANGE FOR REQUIRED INSPECTIONS AND PAY ALL LICENSE, PERMIT AND INSPECTION FEES. THE ELECTRICAL CONTRACTOR AND ALL EMPLOYEES DOING ELECTRICAL WORK SHALL MAINTAIN THE PROPER ELECTRICAL LICENSES FOR THE WORK BEING DONE.

1.4 CONDITIONS AT SITE

THE CONTRACTOR SHALL BE COGNIZANT THAT THIS IS A REMODELING PROJECT AND AS SUCH, ALL FACETS OF THE CONSTRUCTION CANNOT BE SHOWN. A VISIT TO SITE IS REQUIRED OF ALL BIDDERS PRIOR TO SUBMISSION OF BID. ALL WILL BE HELD TO HAVE FAMILIARIZED THEMSELVES WITH ALL DISCERNIBLE CONDITIONS AND NO EXTRA PAYMENT WILL BE ALLOWED FOR WORK REQUIRED BECAUSE OF THESE CONDITIONS, WHETHER SPECIFICALLY MENTIONED OR NOT. LINES OF OTHER SERVICES THAT ARE DAMAGED AS A RESULT OF THIS WORK SHALL PROMPTLY BE REPAIRED AT NO EXPENSE TO THE OWNER TO COMPLETE SATISFACTION OF THE OWNER. SEE SPEC. SECTION 024121 FOR ADDITIONAL REQUIREMENTS.

1.5 GUARANTEE

GUARANTEE THE INSTALLATION FREE FROM DEFECTS OF WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER DATE OF CERTIFICATE OF FINAL PAYMENT AND PROMPTLY REMEDY ANY DEFECTS DEVELOPING DURING THIS PERIOD, WITHOUT CHARGE.

1.6 WORKMANSHIP

ONLY QUALITY WORKMANSHIP WILL BE ACCEPTED. HAPHAZARD OR POOR INSTALLATION PRACTICE WILL BE CAUSE FOR REJECTION OF WORK.

1.7 COORDINATION

COORDINATE WORK WITH OTHER TRADES TO AVOID CONFLICT AND TO PROVIDE CORRECT ROUGH-IN AND CONNECTION FOR EQUIPMENT FURNISHED UNDER OTHER TRADES THAT REQUIRE ELECTRICAL CONNECTIONS. VERIFY EQUIPMENT DIMENSIONS AND REQUIREMENTS WITH PROVISIONS SPECIFIED UNDER THIS SECTION. CHECK ACTUAL JOB CONDITIONS BEFORE FABRICATING WORK. REPORT NECESSARY CHANGES IN TIME TO PREVENT NEEDLESS WORK. VERIFY LOCATIONS OF DEVICES AND FIXTURES WITH ARCHITECTURAL ELEVATIONS AND REFLECTED CEILING DRAWINGS. CONTRACTOR SHALL VERIFY UTILITY ACCEPTANCE OF ANY UTILITY CONNECTED GEAR BEFORE ORDERING AND INSTALLATION.

1.8 CUTTING AND PATCHING

A. ALL CUTTING AND PATCHING REQUIRED FOR WORK OF THIS DIVISION IS INCLUDED HEREIN.

B. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING WITH THE BUILDINGS FIRE RATED PARTITIONS AND PROVIDE FIRE SEALING FOR ALL PENETRATIONS.

1.9 SITE CLEANUP

A. AFTER ALL OTHER WORK HAS BEEN ACCOMPLISHED, CLEAN ALL EXPOSED ELECTRICAL CONDUIT, FIXTURES, EQUIPMENT AND SUPPORTS. TOUCH UP PAINT ON ANY EQUIPMENT SCRAPED, SCRATCHED OR DAMAGED DURING CONSTRUCTION.

B. LEAVE ALL AREAS INVOLVING ELECTRICAL WORK IN A CONDITION SATISFACTORY TO THE OWNER. REMOVE ALL CRATES, CARDBOARD, PACKING MATERIAL, WASTE MATERIAL, AND OTHER DEBRIS LEFT OVER FROM CONSTRUCTION.

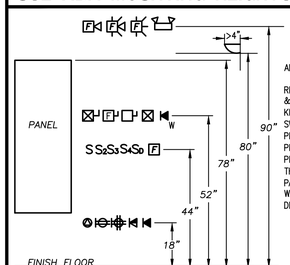
C. RESTORE LANDSCAPE TO BEFORE CONSTRUCTION CONDITION.

ABBREVIATIONS & DESCRIPTIONS

A	AMPERES
AC	ABOVE COUNTER; REFER TO ARCHITECTURAL ELEVATIONS FOR REQUIRED HEIGHT.
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AF	AMPERE FRAME
AT	AMP TRIP
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
D	MECHANICAL DUCT-MOUNTED DEVICE
DC	DIRECT CURRENT
DET	DETAIL
E	EMERGENCY/CRITICAL CARE
(E)	EXISTING
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EL	EMERGENCY LIGHT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
F	FUSE
FACP	FIRE ALARM CONTROL PANEL
FVNR	FULL VOLTAGE NON-REVERSING
G/GND	GROUND
GFI	GROUND FAULT INTERRUPTION
GFP	GROUND FAULT PROTECTION
H	HEAT
HID	HIGH INTENSITY DISCHARGE
HOA	HAND OFF AUTO
HVAC	HEATING, VENTILATING, & AIR CONDITIONING
ID	IN-DUCT
IC	INTERRUPTING CAPACITY
IG	ISOLATED GROUND
J/JB	JUNCTION BOX
KW	KILOWATT
KWH	KILOWATT HOUR
M	MAGNETIC CONTACTOR COIL
MB	MAIN BREAKER
MCC	MOTOR CONTROL CENTER
MLO	MAIN LUGS ONLY
MS	MOTOR STARTER
MH	MANHOLE
MW	MICROWAVE
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OL	OVERLOAD
OS	OCCUPANCY SENSOR
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
PC	PHOTOCELL
PTB	POWER TERMINAL BLOCK
PVC	POLYVINYL CHLORIDE
RCPT	RECEPTACLE
(R)	RELOCATED
(RE)	REPLACED
REF	REFRIGERATOR
SPST	SINGLE POLE SINGLE THROW
TC	TIME CLOCK
TDR	TIME DELAY RELAY
TJB	TERMINAL JUNCTION BOX
TTB	TELEPHONE TERMINAL BOARD
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
TYP	TYPICAL
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VA	VOLT AMPERE
WG	PROVIDE PROTECTIVE WIRE GUARD
WP	WEATHER PROOF/NEMA 3R
XFMR	TRANSFORMER

MOUNTING HEIGHTS DETAIL - STANDARD

WHERE ACCESSIBILITY REQUIREMENTS APPLY, USE ADA MOUNTING HEIGHTS



ADA MOUNTING HEIGHTS:

RECEPT: WALL 16" TO THE BOTTOM RECEPT. & SWITCHES
KITCHEN COUNTER: 44" TO THE TOP
SWITCHES" WALL 48" TO THE TOP
PHONE: WALL 48" TO THE TOP
PHONE: 16" TO THE BOTTOM
PHONE: ABOVE COUNTER 44" TO THE TOP
THERMOSTATS: 48" TO THE TOP
PANELS: TOP OF CIRCUIT BREAKERS 48" AFF
WALL MOUNTED LIGHTING FIXTURES WITH A DEPTH OF OVER 4": MIN 80"AFF

NOTE: HANDICAP ACCESSIBILITY MAY REQUIRE MODIFICATION OF DEVICE HEIGHTS FOR SPECIAL APPLICATIONS. SEE FEDERAL ACCESSIBILITY GUIDELINES AND THE FAIR HOUSING ACT. DIMENSIONS ARE MEASURED AFF, ON CENTER UNO.

PART 2 - PRODUCTS

2.1 MATERIAL APPROVAL

ALL MATERIALS MUST BE NEW AND BEAR U.L. LABEL. MATERIALS THAT ARE NOT COVERED BY UL TESTING STANDARDS SHALL BE TESTED AND APPROVED BY AN INDEPENDENT TESTING LABORATORY OF A GOVERNMENTAL AGENCY APPROVED BY THE AUTHORITY HAVING JURISDICTION.

2.2 WIRES AND CABLES

A. CONDUCTORS FOR 600V SYSTEMS AND BELOW SHALL BE COPPER, #12 AWG MINIMUM FOR POWER AND LIGHTING.

B. INSULATION SHALL BE THWN FOR WET LOCATIONS AND THHN FOR DRY LOCATIONS.

C. TYPE MC CABLE WHERE ALLOWED BY NEC ART 330 AND THE AHJ.

2.3 OUTLET BOXES, JUNCTION & PULL BOXES

A. OUTLET BOXES: HOT-DIPPED, GALVANIZED OR SHERADIZED OR REQUIRED SIZE, 4" SQUARE 2⅛" DEEP MINIMUM, FOR FLUSH MOUNTED DEVICES AND LIGHTING FIXTURES.

B. JUNCTION AND PULL BOXES: HOT DIPPED, GALVANIZED OR SHERADIZED, SIZED ACCORDING TO CODE. LARGER JUNCTION AND PULL BOXES SHALL BE FABRICATED FROM SHEET STEEL, SIZED ACCORDING TO CODE, WITH SCREW-ON COVERS, FINISHED GRAY BAKED ENAMEL.

2.4 WIRING DEVICES

A. STRAIGHT BLADE AND LOCKING RECEPTACLES: SPECIFICATION GRADE, 125V, NEMA WD1, CONFIGURATION 5-20R, 20AMPS, UNLESS OTHERWISE NOTED. SCREW-TYPE WIRE TERMINALS SUITABLE FOR NO. 10 AWG.

B. GROUND FAULT INTERRUPTER (GFI) RECEPTACLES: 5mA GFCI, GROUNDED, RATED 20A, 125V. PROVIDE IN USE COVERS WHERE MOUNTED OUTSIDE.

C. SNAP SWITCHES: SPECIFICATION GRADE, 20A, TOTALLY ENCLOSED, AC TYPE, WITH QUIET TUMBLER SWITCHES AND SET SCREW TERMINALS.

D. DEVICE PLATES: SPECIFICATION-GRADE NYLON.

E. VERIFY DEVICE COLOR WITH ARCHITECT.

F. PROVIDE A NEUTRAL CONDUCTOR IN ALL SWITCH BOXES.

G. SWITCHES SHALL BE INSTALLED ON THE STRIKE SIDE OF THE DOOR U.N.O. CONTRACTOR IS RESPONSIBLE FOR VERIFYING DOOR SWING.

2.5 GROUNDING

GROUND AND BOND AS PER NEC ART 250. PROVIDE INSULATED GREEN GROUND WIRE IN ALL RACEWAYS.

2.6 LOADCENTERS

PROVIDE A NEW TYPE WRITTEN SCHEDULE ON ALL PANELS INCLUDING THOSE EXISTING PANELS THAT HAVE HAD CHANGES.

2.7 FIRE ALARM EQUIPMENT

A. FIRE ALARM CONTROL PANEL: INTELLIGENT, ANALOG ADDRESSABLE WITH INITIATING LOOP TO SUPPORT UP TO 159 DEVICES.

B. MANUAL PULL STATION: DUAL ACTION. PROVIDE ADDRESSABLE MODULE AS REQUIRED.

C. HORN/STROBE: 96 dB, AVERAGE AT 10'. ADA/UL 1971 COMPLIANT, SYNCHRONIZED IN COMMON AREAS, WITH CANDELA RATING AS INDICATED. UL-LISTED FOR CEILING-MOUNT WHERE CALLED OUT.

D. STROBE-ONLY: SAME VISUAL REQUIREMENTS AS LISTED ABOVE.

E. SMOKE DETECTOR: PHOTOELECTRIC, ADDRESSABLE. PROVIDE HOUSING AND SAMPLING TUBE AND INTEGRAL RELAY BASE WHERE REQUIRED FOR DUCT-DETECTION.

F. REMOTE ANNUNCIATOR: 80 CHARACTER ALPHANUMERIC, BACKLIT DISPLAY, LOCAL PIEZIO ALARM.

G. FIRE ALARM CONTRACTOR TO SUPPLY FIRE ALARM SHOP DRAWINGS REVIEWED AND APPROVED BY THE AHJ AS A SUBMITTAL TO BE APPROVED BY THE ENGINEER. SHOP DRAWINGS SHALL INCLUDE HORN dB AND STROBE CANDELA RATINGS.

H. SPECIFIED EQUIPMENT HAS BEEN SPECIFIED TO BE INCORPORATED INTO A SINGLE FIRE ALARM SYSTEM. ANY SUBSTITUTE EQUIPMENT SHALL MEET ALL DESIGN SPECIFICATIONS THAT HAS BEEN PREPARED FOR THE SYSTEM. ANY SUBSTITUTE EQUIPMENT SHALL OPERATE WITH ALL OTHER SPECIFIED EQUIPMENT. ANY SUBSTITUTE EQUIPMENT SHALL BE APPROVED BY OWNER REPRESENTATIVE. THE EQUIPMENT SPECIFIED TO WORK AS A SINGLE SYSTEM IS AS FOLLOWS: NOTIFIER NFS2-3030, HONEYWELL HPF24S8, PROTECTOWIRE 8000, FAAST 8251, ALL ANCILLARY AND INTERCONNECT EQUIPMENT.

2.8 WARRANTY

CONTRACTOR WILL INCLUDE A ONE YEAR WARRANTY ON ALL WORK. CONTRACTOR SHALL IN ADDITION HONOR ALL MANUFACTURES WARRANTIES ON EQUIPMENT AND WARRANTIES CALLED OUT IN EQUIPMENT SPECIFICATIONS. WARRANTY PERIOD SHALL BEGIN AT SUBSTANTIAL COMPLETION.

PART 3 - EXECUTION

3.1 GENERAL

A. ELECTRIC SYSTEM LAYOUTS INDICATED ON THE DRAWINGS ARE GENERALLY DIAGRAMMATIC, BUT SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT.

B. CONSULT ALL OTHER DRAWINGS. VERIFY SCALES AND REPORT ANY DIMENSIONAL DISCREPANCIES OR OTHER CONFLICTS TO ARCHITECT BEFORE SUBMITTING BID.

C. AVOID CUTTING AND BORING HOLES THROUGH STRUCTURE OR STRUCTURAL MEMBERS WHEREVER POSSIBLE.

D. ALL ELECTRICAL WORK TO BE CONCEALED IN FINISHED AREAS, UNO.

E. MULTI WIRE CIRCUITS NOT ALLOWED. EACH 120V CIRCUIT SHALL HAVE A DEDICATED NEUTRAL.

3.2 ELECTRICAL EQUIPMENT INSTALLATION

A. HEAD ROOM MAINTENANCE: IF MOUNTING HEIGHTS OR OTHER LOCATION CRITERIA ARE NOT INDICATED, ARRANGE AND INSTALL COMPONENTS AND EQUIPMENT TO PROVIDE THE MAXIMUM POSSIBLE HEADROOM.

B. MATERIALS AND COMPONENTS: INSTALL LEVEL, PLUMB, AND PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, UNLESS OTHERWISE INDICATED.

C. EQUIPMENT: INSTALL TO FACILITATE SERVICE, MAINTENANCE, AND REPAIR OR REPLACEMENT OF COMPONENTS. CONNECT FOR EASE OF DISCONNECTING, WITH MINIMUM INTERFERENCE WITH OTHER INSTALLATIONS. PROVIDE COVERS TO FIT APPLICATION (FLUSH OR SURFACE MOUNT).

D. RIGHT OF WAY: COORDINATE INSTALLATION OF ELECTRICAL DEVICES WITH OTHER TRADES.

3.3 INSTALLATION OF CONDUIT

A. ABOVE GRADE: RIGID STEEL, SCH 80 PVC, OR IMC IN WET LOCATIONS, WHERE SUBJECT TO MECHANICAL DAMAGE AND IN CONCRETE OR BLOCK WALLS, EMT IN OTHER LOCATIONS WHERE PERMITTED BY CODE.

B. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL ELECTRICAL EXCAVATION, BACKFILL, AND COMPACTION.

3.4 RACEWAY AND CABLE INSTALLATION

A. CONCEAL RACEWAYS AND CABLES WITHIN FINISHED WALLS, CEILINGS, AND FLOORS, UNLESS OTHERWISE INDICATED.

B. INSTALL RACEWAYS AND CABLES AT LEAST SIX (6) INCHES AWAY FROM PARALLEL RUNS OF FLUES AND STEAM OR HOT-WATER PIPES. LOCATE HORIZONTAL RACEWAY RUNS ABOVE WATER AND STEAM PIPING.

3.8 IDENTIFICATION

A. PROVIDE ENGRAVED 3 LAYER LAMINATE PLASTIC NAMEPLATES FOR PANELBOARDS, DISCONNECT SWITCHES AND ALL SIMILAR DEVICES.

B. COLOR-CODE 240/120-VOLT SYSTEM SECONDARY SERVICE, FEEDER, AND BRANCH-CIRCUIT CONDUCTORS THROUGHOUT THE SECONDARY ELECTRICAL SYSTEM AS FOLLOWS:

PHASE A: BLACK
PHASE B: RED
NEUTRAL: WHITE
GROUND: GREEN

C. LABEL ALL J-BOXES WITH CIRCUIT NUMBERS OF WIRING WITHIN MARK INSIDE OF ALL DEVICE BOXES WITH CIRCUIT NUMBERS. LABEL RECEPTACLE DEVICE PLATES WITH CIRCUIT NUMBER (CLEAR LABEL TAPE WITH BLACK LETTERS).

3.9 STARTUP SERVICES

A. CONTRACTOR SHALL ALLOT A MINIMUM OF 2 HOURS FOR STARTUP SERVICES. START AND OPERATE ALL SYSTEMS AS REQUIRED BY THE OWNER. INSTRUCT OWNER'S REPRESENTATIVE ON THE PROPER OPERATION AND MAINTENANCE OF THE SYSTEMS AND EQUIPMENT.

B. AS PART OF THE START UP SERVICES, PROVIDE THE REQUIRED COMMISSIONING OF THE LIGHTING CONTROLS AS STATED IN THE ENERGY CONSERVATION CODE SECTION 408.3. PROVIDE WRITTEN DOCUMENTATION TO THE ARCHITECT.

3.10 OPERATING & MAINTENANCE INSTRUCTIONS (O+M MANUAL)

A. PREPARE ONE (1) COPY FOR ALL EQUIPMENT.

3.11 RECORD AS-BUILTS

A. PROVIDE (1) CLEAN, LEGIBLE COPY OF DRAWINGS TO ENGINEER INDICATING ALL DEVIATIONS FROM INITIAL DESIGN (AS-BUILT CONDITIONS).

SHEET INDEX

GENERAL ELECTRICAL NOTES

(RE: ALL ELECTRICAL SHEETS)

E1 ALL ELECTRICAL EQUIPMENT AND SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, UNIFORM FIRE CODE, AND ALL OTHER STATE AND LOCAL CODES. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER IN WRITING IF PORTIONS OF THE DESIGN SET OR FIELD CONDITIONS DO NOT MEET REQUIRED CODES.

E2 ALLOW IN THE ELECTRICAL BID – BEFORE ROUGH IN, MOVEMENT OF UP TO 10' OF ANY FIXTURE OR DEVICE WITHOUT ADDITIONAL CHARGE.

E3 FIRE ALARM SYSTEM IS DESIGN BUILD FURNISHED UNDER THE ELECTRICAL CONTRACT. PROVIDE AND INSTALL CONDUIT/CONDUCTORS AND FIRE ALARM DEVICES AS SHOWN ON THE DRAWINGS AND REQUIRED BY LOCAL JURISDICTION, INCLUDING BUT NOT LIMITED TO FIRE ALARM CONTROL PANEL MODIFICATIONS, INITIATING AND ANNUNCIATING CIRCUITS. FIELD INSPECTION IS REQUIRED TO VERIFY THIS INFORMATION PRIOR TO BID.

DC ENGINEERING
123 W. Spruce St.
Missoula, Montana 59802
ph: 406-529-9828
fax: 406-529-9829
project 17KOM01

MONTANA
JONATHAN A. GORANSON
No. 15037PE
LICENSED PROFESSIONAL ENGINEER
04/27/2018

NO.	REVISIONS	DATE

BANNACK STATE PARK
FIRE ALARM SYSTEM UPGRADE
DILLON, MT
FWP #7176301

SCALE: SEE SCALE
DATE: DATE
DRAWN BY: INITIALS
SHEET NAME: ELECTRICAL COVER & SPEC SHEET
SHEET: E0.00

BANNACK STATE PARK BUILDING LIST

BLDG ID	MOST COMMON NAME
A1-1	MANAGER'S HOUSE
A1-2	OFFICE
A1-3	ELLIOT HOUSE
A1-4	FRENCH'S BARN
A2	VISITOR CENTER
A3	STATE HOUSE
A4	JACKSON HOUSE (WEST)
A5-1	TURNER HOUSE
A5-2	DAISY ASHWORTH HOUSE
A6	ASSAY OFFICE
A7-1	ROAD AGENT STORE
A7-2	HORSE BARN
A8	HOTEL MEADE
A9	SKINNER SALOON
A11	JACKSON HOUSE (EAST)
A13*	UNDERWOOD HOUSE
A13-1	GRAVES HOUSE
A13-3	CARRIAGE HOUSE
A13-4	UNKNOWN
A13-5	UNKNOWN
A13-6	UNKNOWN
A13-7	UNKNOWN
A13-8	UNDERWOOD HOUSE
A16	METHODIST CHURCH
A17-1	PARSONAGE/TASH
A17-2	BATH HOUSE
A-18	BOOTLEGGERS CABIN
A19-1	McMANUS HOUSE
A21	KNOLL HOUSE
A22-1	RENOIS HOUSE
A22-2	SUDBERRY HOUSE
A23-1	THOMPSON HOUSE
A23-2	THOMPSON GARAGE
A25	ANDERSON HOUSE
A26	NEW SHOP
A27	MILL
B1-1	BREWER CABIN
B2	MATHEWS HOUSE
B3-1	GRAETER HOUSE
B4-1	RYBURN HOUSE
B5-1	CARRHART HOUSE
B6	MASONIC LODGE/SCHOOL
B7	WARNECKE CABIN
B8	UNKNOWN
B9	MONTANA HOTEL
B10	GIBSON HOUSE
B11	SOD ROOF STORE
B12-1	CRISMAN STORE
B12-2	FIRST JAIL
B12-3	SECOND JAIL
B13-1	OVITT'S STORE
B13-2	UNKNOWN
B13-3	UNKNOWN
B14	APEX MINING CO OFFICE
B15-1	RETTALLACK HOUSE
B15-2	UNKNOWN
B16-1	GRIFFITH HOUSE
B16-2	FIRE HOUSE
B16-3	UNKNOWN
B17	BESSETTE HOUSE
B18-1	DECKER HOUSE
B18-2	MARMOT SHACK

1 OVERALL SITE PLAN
SCALE: SEE BAR SCALE

AE ENGINEERING
133 N. Spruce St.
Missoula, Montana 59802
ph: 406-529-8828
fax: 406-529-8829
project 17SOM01

MONTANA
JONATHAN A.
GORANSON
No. 15037PE
LICENSED
PROFESSIONAL ENGINEER

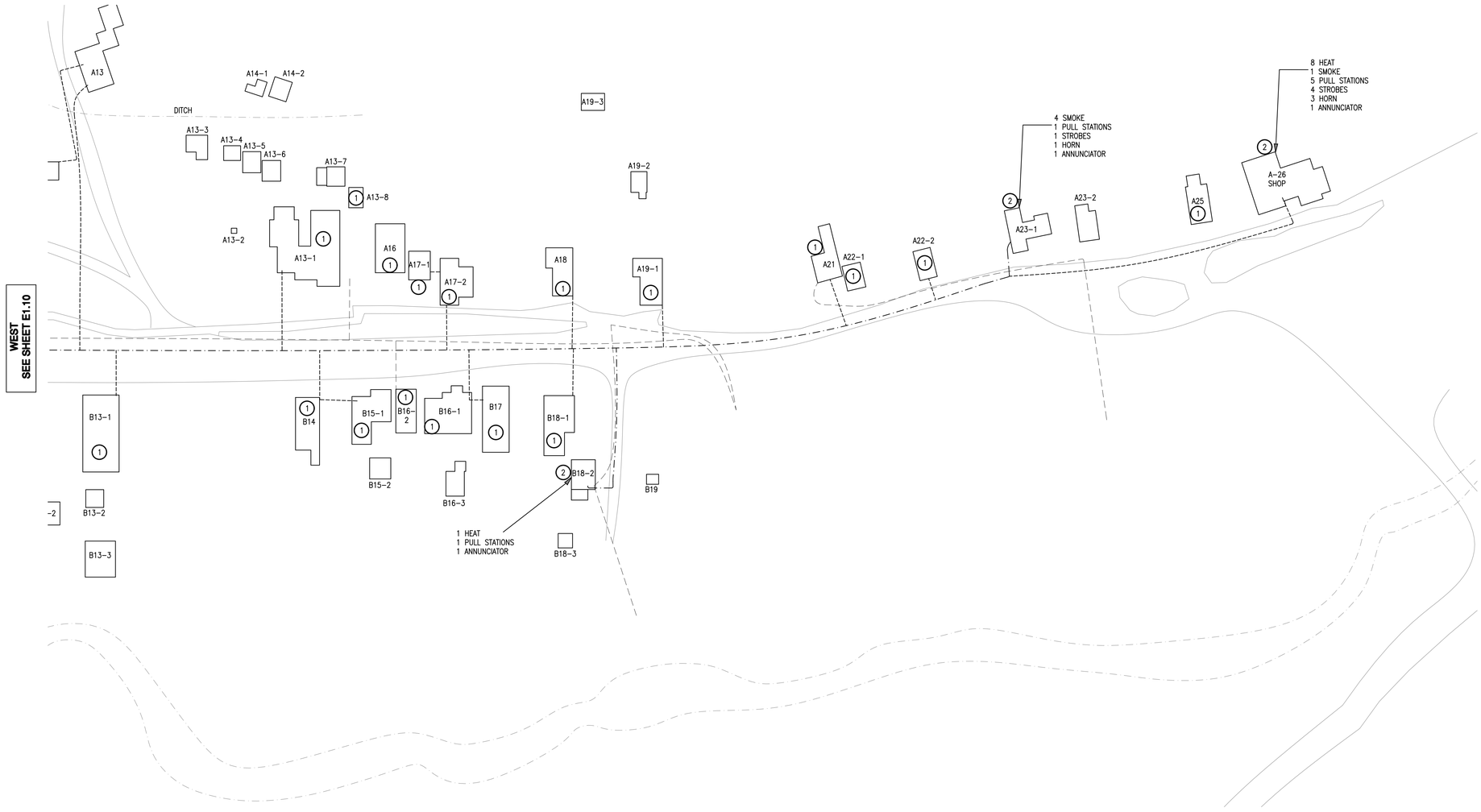
04/27/2018

NO.	REVISIONS	DATE

BANNACK STATE PARK
FIRE ALARM SYSTEM UPGRADE
DILLON, MT
FWP #7176301

SCALE: SEE SCALE
DATE: DATE
DRAWN BY: INITIALS
SHEET NAME: ELECTRICAL SITE PLAN- OVERALL

SHEET: E1.00



1 EXISTING FA SYSTEM SITE PLAN - EAST

SCALE: SEE BAR SCALE

NORTH

0 40 60 80

SCALE IN FEET

GENERAL NOTES:

A. CONTRACTOR RESPONSIBLE FOR REMOVING AND REPLACING BOARDWALKS FOR TRENCHING AS NEEDED.

B. ROUTING OF EXISTING CABLE AND WIRE BASED OFF 1984 SORENSON & COMPANY DRAWING. ROUTING INDICATES GENERAL LOCATION.

C. DEMO ALL WIRE AND DEVICES WHERE PRACTICAL. WHERE NOT EXPOSED AND PRACTICAL, ABANDON IN PLACE.

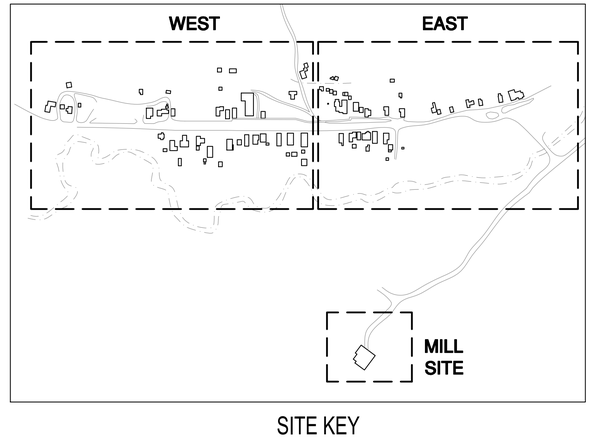
KEYED NOTES:

1. DEMO HEAT DETECTOR AFTER NEW SYSTEM IS FUNCTIONAL.
2. DEMO EXISTING FIRE ALARM DEVICES AFTER NEW SYSTEM IS FUNCTIONAL.
3. DEMO EXISTING FACP AND ALL ANCILLARY DEVICES UPON COMPLETION.

LEGEND

SEE KEYED NOTES FOR CONDUIT SIZE

- EXISTING FIRE ALARM AND CONTROL
- EXISTING FIRE ALARM
- EXISTING ELECTRIC
- EXISTING TELEPHONE



SITE KEY

AE ENGINEERING
133 H. Spruce St.
Missoula, Montana 59802
ph: 406-829-8828
fax: 406-829-8829
project 17KXM01

MONTANA
JONATHAN A.
GORANSON
No. 15037PE
LICENSED
PROFESSIONAL ENGINEER

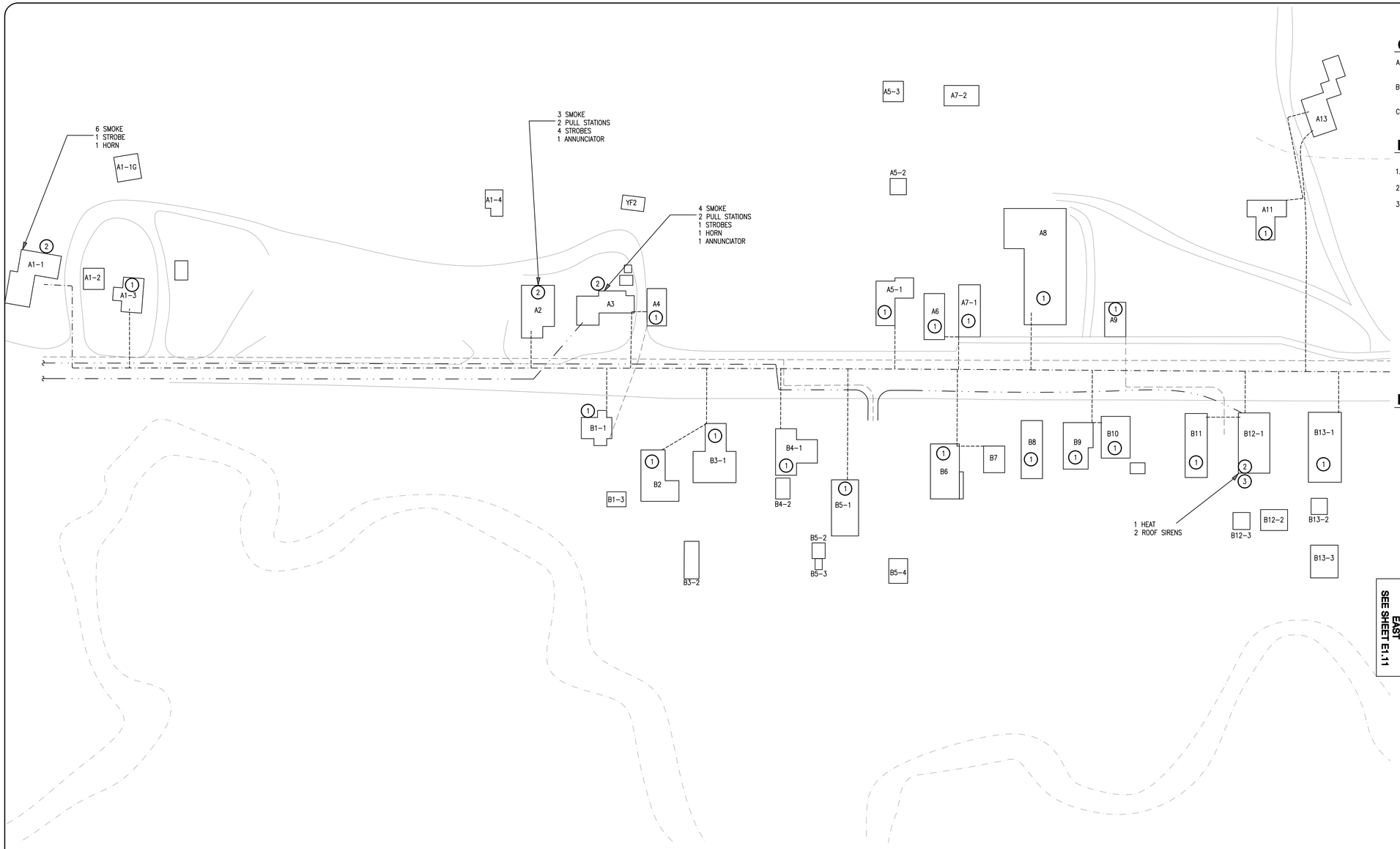
04/27/2018

NO.	REVISIONS	DATE

BANNACK STATE PARK
FIRE ALARM SYSTEM UPGRADE
DILLON, MT
FWP #7176301

SCALE: SEE SCALE
DATE: DATE
DRAWN BY: INITIALS
SHEET NAME: EXISTING FA & DEMO SITE PLAN - EAST

SHEET E1.10E



GENERAL NOTES:

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B. ROUTING OF EXISTING CABLE AND WIRE BASED OFF 1984 SORENSON & COMPANY DRAWING. ROUTING INDICATES GENERAL LOCATION.

C. DEMO ALL WIRE AND DEVICES WHERE PRACTICAL. WHERE NOT EXPOSED AND PRACTICAL, ABANDON IN PLACE.

KEYED NOTES:

1. DEMO HEAT DETECTOR AFTER NEW SYSTEM IS FUNCTIONAL.
2. DEMO EXISTING FIRE ALARM DEVICES AFTER NEW SYSTEM IS FUNCTIONAL.
3. DEMO EXISTING FACP AND ALL ANCILLARY DEVICES UPON COMPLETION.

LEGEND

SEE KEYED NOTES FOR CONDUIT SIZE

- EXISTING FIRE ALARM AND CONTROL
- EXISTING FIRE ALARM
- EXISTING ELECTRIC
- EXISTING TELEPHONE

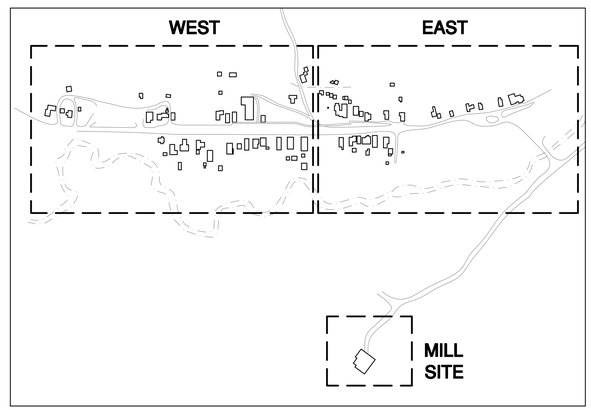
NORTH

0 40 60 80

SCALE IN FEET

1 EXISTING FA SYSTEM SITE PLAN - WEST

SCALE: SEE BAR SCALE



SITE KEY

AE ENGINEERING
131 W. Spruce St.
Missoula, Montana 59802
ph: 406-529-8828
fax: 406-926-0625
project 17NOM01

MONTANA
JONATHAN A. GORANSON
No. 15037PE
LICENSED PROFESSIONAL ENGINEER

04/27/2018

NO.	REVISIONS	DATE

BANNACK STATE PARK
FIRE ALARM SYSTEM UPGRADE
DILLON, MT
FWP #7176301

SCALE: SEE SCALE
DATE: DATE
DRAWN BY: INITIALS
SHEET NAME: EXISTING FA & DEMO SITE PLAN - WEST

SHEET E1.10W

1 **SITE TRENCHING PLAN - EAST**
SCALE: 1" = 40'-0"

GENERAL NOTES:

A. CONTRACTOR RESPONSIBLE FOR REMOVING AND REPLACING BOARDWALKS FOR TRENCHING AS NEEDED.

B. BACKHOE TRENCHES TO BE APPROXIMATELY 24" WIDE X 30" DEEP.

C. WALK-BEHIND TRENCHES TO BE APPROXIMATELY 12" WIDE X 24" DEEP.

D. HAND DUG TRENCHES TO BE APPROXIMATELY 12" WIDE BY 24" DEEP.

E. DIRECTIONAL BORE UNDER DITCH.

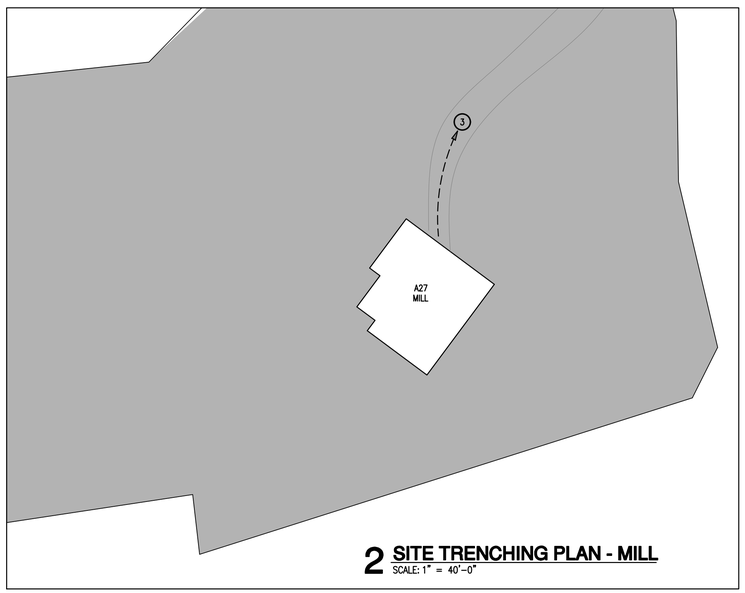
F. DISTURBED AREA IS RECREATED FROM DRAWINGS RECEIVED BY MONTANA FWP.

KEYED NOTES:

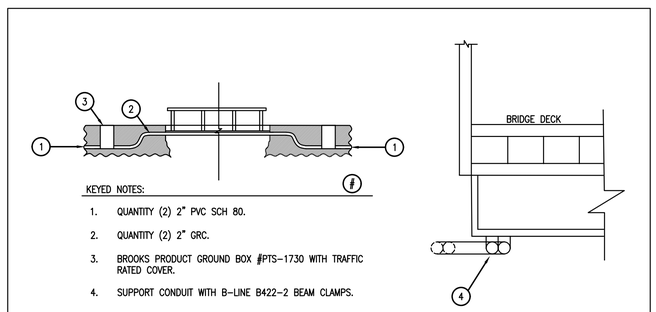
1. TRENCH TO MILL, 1600' FROM SHOP. TRENCH RAN IN ROAD.
2. CONDUIT ATTACHED ON THE UNDERSIDE OF THE BRIDGE TO SPAN THE LENGTH OF BRIDGE. REFERENCE DETAIL 3 ON SHEET E1.20E.
3. TRENCH FROM SHOP, 1600' FROM SHOP. TRENCH RAN IN ROAD.
4. TRENCH TO BE DUG IN ROAD.

LEGEND

- TRENCH DUG BY BACKHOE
- TRENCH DUG BY WALK-BEHIND
- TRENCH DUG BY HAND
- DIRECTIONAL BORE
- PREVIOUSLY DISTURBED AREA PROVIDED BY MONTANA FWP



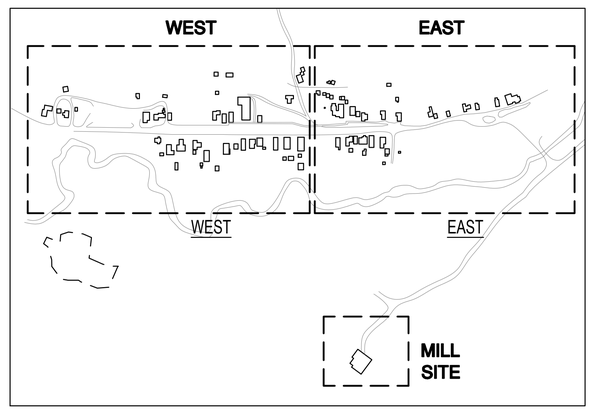
2 **SITE TRENCHING PLAN - MILL**
SCALE: 1" = 40'-0"



KEYED NOTES:

1. QUANTITY (2) 2" PVC SCH 80.
2. QUANTITY (2) 2" GRC.
3. BROOKS PRODUCT GROUND BOX #PTS-1730 WITH TRAFFIC RATED COVER.
4. SUPPORT CONDUIT WITH B-LINE B422-2 BEAM CLAMPS.

3 **TRENCH TO BRIDGE CONDUIT DETAIL**
SCALE: NTS



SITE KEY

ENGINEERING
123 W. Spruce St.
Missoula, Montana 59802
ph: 406-529-8828
fax: 406-926-0625
project 17SOM01

MONTANA
JONATHAN A. GORANSON
No. 15037PE
LICENSED PROFESSIONAL ENGINEER
04/27/2018

NO.	REVISIONS	DATE

BANNACK STATE PARK
FIRE ALARM SYSTEM UPGRADE
DILLON, MT
FWP #7176301

SCALE: SEE SCALE
DATE: DATE
DRAWN BY: INITIALS
SHEET NAME: SITE TRENCHING PLAN - EAST

SHEET
E1.20E

GENERAL NOTES:

A. CONTRACTOR RESPONSIBLE FOR REMOVING AND REPLACING BOARDWALKS FOR TRENCHING AS NEEDED.

B. BACKHOE TRENCHES TO BE APPROXIMATELY 24" WIDE X 30" DEEP.

C. WALK-BEHIND TRENCHES TO BE APPROXIMATELY 12" WIDE X 24" DEEP.

D. HAND DUG TRENCHES TO BE APPROXIMATELY 12" WIDE BY 24" DEEP.

E. DIRECTIONAL BORE UNDER DITCH.

F. DISTURBED AREA IS RECREATED FROM DRAWINGS RECEIVED BY MONTANA FWP.

KEYED NOTES:

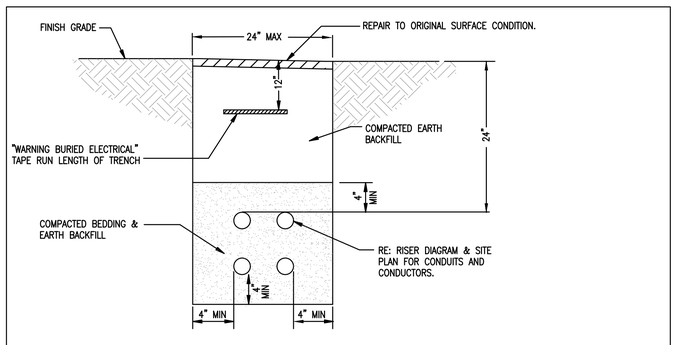
1. TRENCH TO MILL, 1600' FROM SHOP. TRENCH RAN IN ROAD.
2. CONDUIT ATTACHED ON THE UNDERSIDE OF THE BRIDGE TO SPAN THE LENGTH OF BRIDGE. REFERENCE DETAIL 3 ON SHEET E1.20E.
3. TRENCH FROM SHOP, 1600' FROM SHOP. TRENCH RAN IN ROAD.
4. TRENCH TO BE DUG IN ROAD.

LEGEND

- TRENCH DUG BY BACKHOE
- TRENCH DUG BY WALK-BEHIND
- TRENCH DUG BY HAND
- DIRECTIONAL BORE
- PREVIOUSLY DISTURBED AREA PROVIDED BY MONTANA FWP

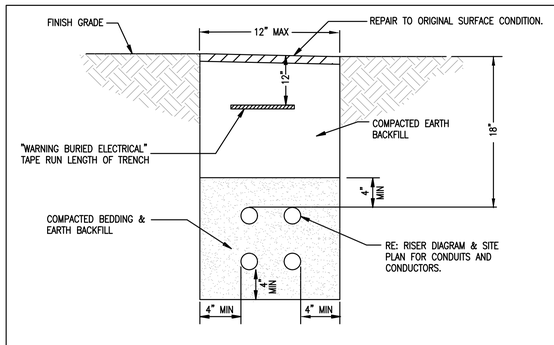
1 SITE TRENCHING PLAN - WEST

SCALE: SEE BAR SCALE



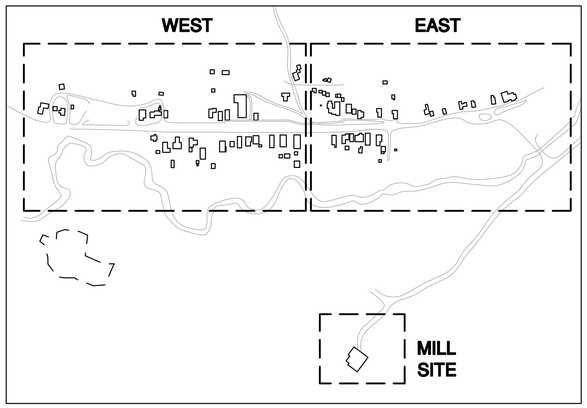
1 BACKHOE TRENCH UNDERGROUND CONDUIT DETAIL

Scale: NTS



2 WALK-BEHIND AND HAND DUG TRENCH UNDERGROUND CONDUIT DETAIL

Scale: NTS



SITE KEY

AE ENGINEERING
123 H. Spruce St.
Missoula, Montana 59802
ph: 406-529-8828
fax: 406-926-0829
project 17XM01

MONTANA JONATHAN A. GORANSON No. 15037PE LICENSED PROFESSIONAL ENGINEER

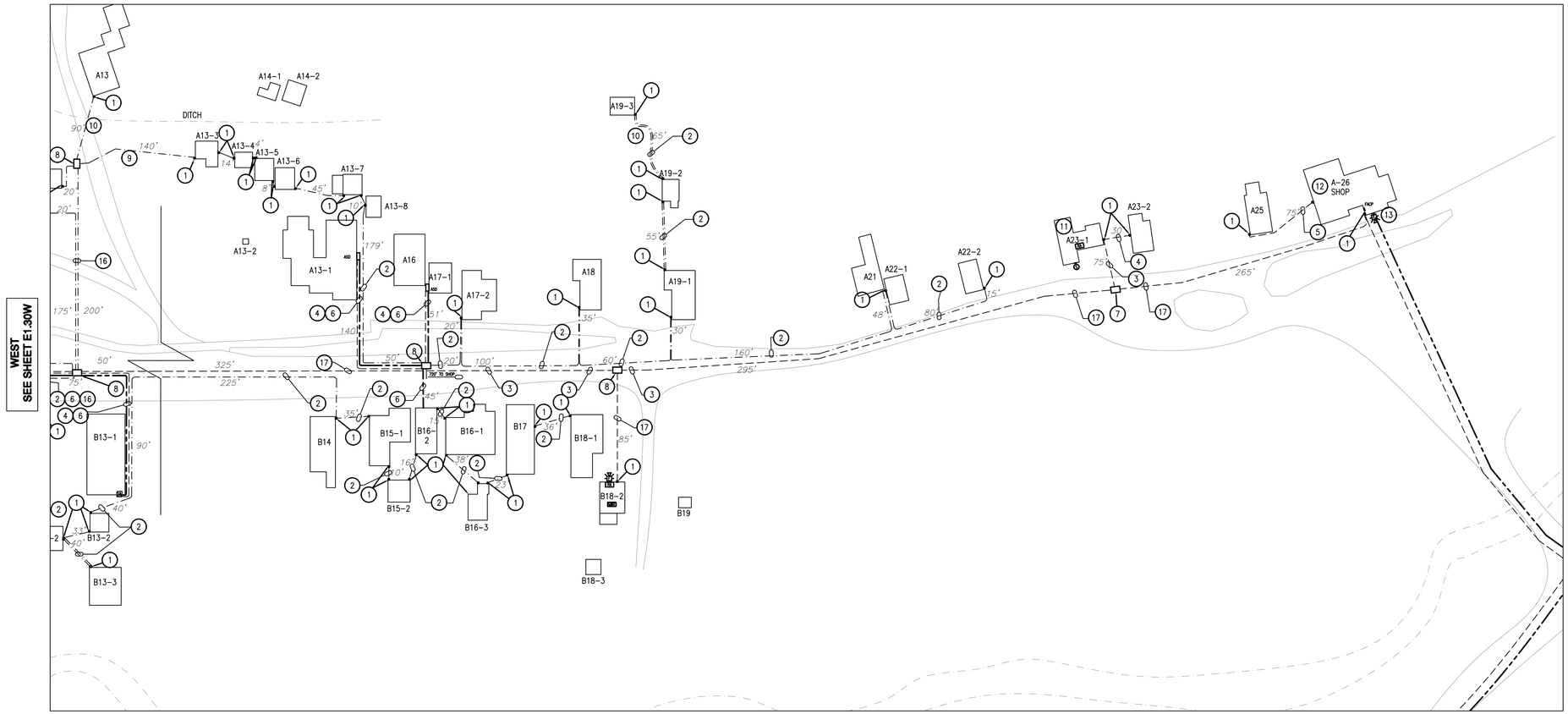
04/27/2018

NO.	REVISIONS	DATE

BANNACK STATE PARK
FIRE ALARM SYSTEM UPGRADE
DILLON, MT
FWP #7176301

SCALE: SEE SCALE
DATE: DATE
DRAWN BY: INITIALS
SHEET NAME: SITE TRENCHING PLAN - WEST

SHEET E1.20W



GENERAL NOTES:

A. CONTRACTOR RESPONSIBLE FOR REMOVING AND REPLACING BOARDWALKS FOR TRENCHING AS NEEDED.
B. GALVANIZED RIGID CONDUIT FACTORY 90° MUST BE USED WITH 3M SCOTCH WRAP 50 TAPE.

KEYED NOTES: (#)

1. SEE 2,3,/E1.30W.
2. 1 1/2" PVC SCH 80 FOR FIBER CABLE.
3. (2) – 2" PVC SCH 80 FOR FA WIRING.
4. 1" PVC SCH 80 FOR FA WIRING.
5. EXISTING 1" CONDUIT.
6. 1" PVC SCH 80 FOR POWER.
7. BROOKS PRODUCT GROUND BOX #PTS-1730 WITH TRAFFIC RATED COVER.
8. BROOKS PRODUCTS GROUND BOX #67 WITH TRAFFIC RATED COVER LABELED "COMMUNICATIONS". PROVIDE WITH DIVIDER TO SEPARATE POWER FROM DATA.
9. BURY CONDUIT ADJACENT TO DITCH BANK.
10. DIRECTIONAL BORE, UNDER DITCH, 2"C CONDUIT BETWEEN A11-A13.
11. EXISTING ADDRESSABLE FA WIRING INSIDE. PROVIDE NEW DEVICES.
12. PROVIDE NEW WIRING AND DEVICES.
13. WEATHER PROOF DEVICE.
14. BURY CONDUIT IN ROAD OR TRAIL.
15. EXISTING FACP TO BE REMOVED. LOCATION FOR NEW LINEAR HEAT DETECTION MODULE.
16. 2" PVC SCH 80.
17. (3) 2" PVC SCH 80.

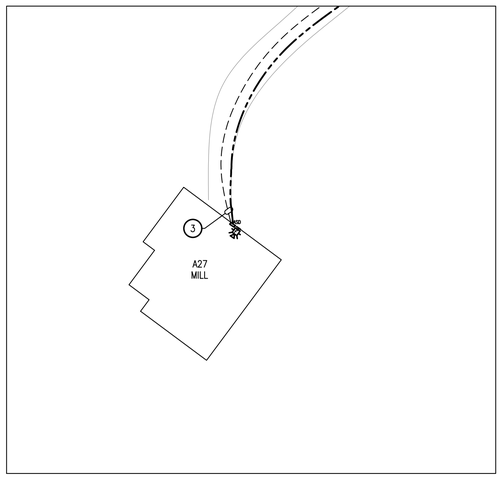
LEGEND

SEE KEYED NOTES FOR CONDUIT SIZE
LINEAR FIBER HEAT DETECTION CABLE CONDUIT
FIRE ALARM WIRING
POWER CONDUIT

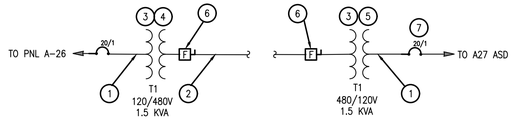
NORTH

0 40 60 80
SCALE IN FEET

1 NEW FA SYSTEM SITE PLAN - EAST
SCALE: SEE BAR SCALE



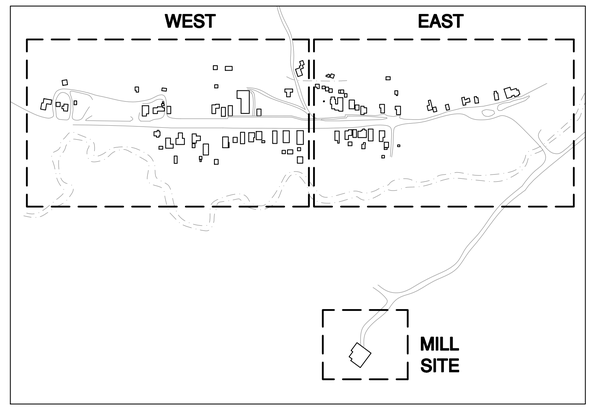
2 NEW FA SYSTEM SITE PLAN-MILL SITE
SCALE: SEE BAR SCALE



KEYED NOTES: (#)

1. 3/4" CONDUIT, (2) #10, (1) #10 GND.
2. 2" CONDUIT, (2) #10, (1) #10 GND.
3. TRANSFORMER T1 120V/480V 1.5 KVA 3R.
4. MOUNT OUTSIDE OF SHOP BUILDING ADJACENT TO THE FACP.
5. MOUNT ADJACENT TO ASD AT BUILDING A27.
6. 600V 2P 30A 5AFU 3R.
7. SUPPLY 3R RATED, 2 BREAKER PANEL MOUNTED ADJACENT TO ASD PANEL.

3 POWER TO MILL 120V/480V
SCALE: NTS



SITE KEY

AE ENGINEERING
133 W. Spruce St.
Missoula, Montana 59802
ph: 406-529-8828
fax: 406-926-0829
project 17SOM01

MONTANA
JONATHAN A.
GORANSON
No. 15037PE
LICENSED
PROFESSIONAL ENGINEER
04/27/2018

NO.	REVISIONS	DATE

BANNACK STATE PARK
FIRE ALARM SYSTEM UPGRADE
DILLON, MT
FWP #7176301

SCALE: SEE SCALE
DATE: DATE
DRAWN BY: INITIALS
SHEET NAME: NEW FA SYSTEM SITE PLAN - EAST

SHEET E1.30E

GENERAL NOTES:

A. CONTRACTOR RESPONSIBLE FOR REMOVING AND REPLACING BOARDWALKS FOR TRENCHING AS NEEDED.
B. GALVANIZED RIGID CONDUIT FACTORY 90° MUST BE USED WITH 3M SCOTCH WRAP 50 TAPE.

KEYED NOTES: (#)

1. SEE 2,3,/E1.30W.
2. 1 1/2" PVC SCH 80 FOR FIBER CABLE.
3. (2) – 2" PVC SCH 80 FOR FA WIRING.
4. 1" PVC SCH 80 FOR FA WIRING.
5. EXISTING 1" CONDUIT.
6. 1" PVC SCH 80 FOR POWER.
7. BROOKS PRODUCT GROUND BOX #PTS-1730 WITH TRAFFIC RATED COVER.
8. BROOKS PRODUCTS GROUND BOX #67 WITH TRAFFIC RATED COVER LABELED "COMMUNICATIONS". PROVIDE WITH DIVIDER TO SEPARATE POWER FROM DATA.
9. BURY CONDUIT ADJACENT TO DITCH BANK.
10. DIRECTIONAL BORE, UNDER DITCH, 2"C CONDUIT BETWEEN A11–A13.
11. EXISTING ADDRESSABLE FA WIRING INSIDE. PROVIDE NEW DEVICES.
12. PROVIDE NEW WIRING AND DEVICES.
13. WEATHER PROOF DEVICE.
14. BURY CONDUIT IN ROAD OR TRAIL.
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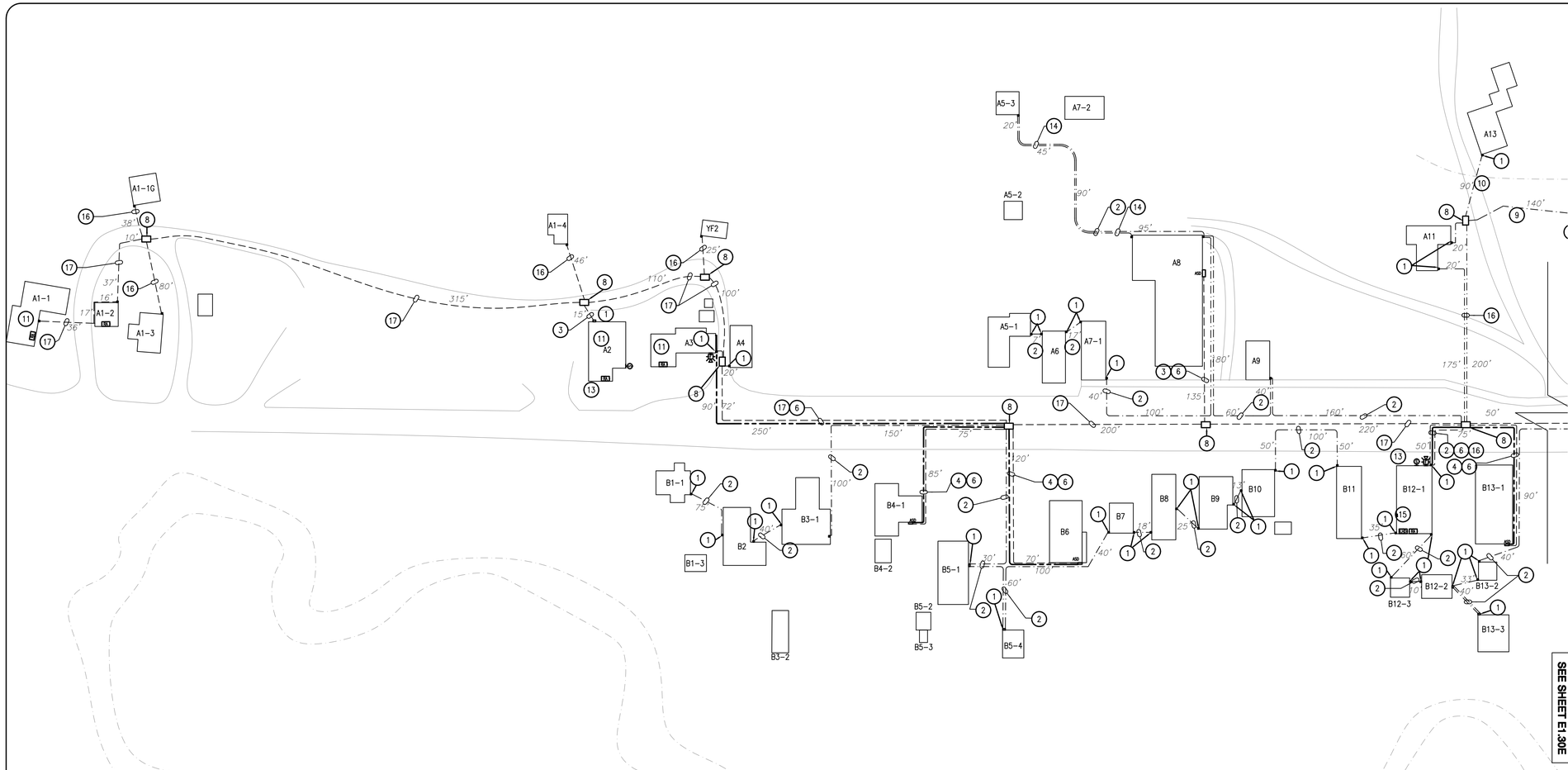
16. 2" PVC SCH 80.
17. (3) 2" PVC SCH 80.

LEGEND

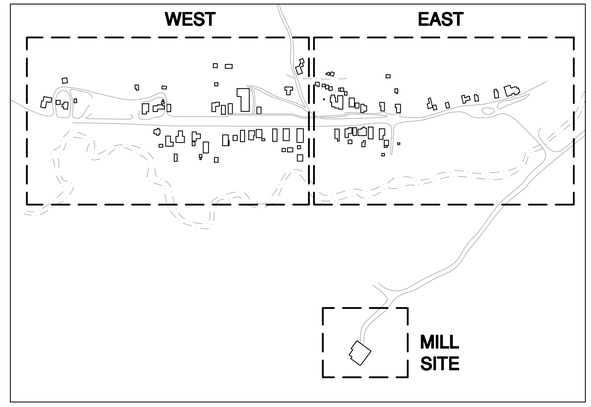
SEE KEYED NOTES FOR CONDUIT SIZE
LINEAR FIBER HEAT DETECTION CABLE CONDUIT
FIRE ALARM WIRING
POWER CONDUIT



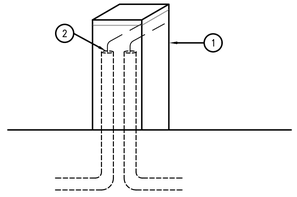
1 NEW FA SYSTEM SITE PLAN - WEST
SCALE: SEE BAR SCALE

NORTH

0 40 60 80
SCALE IN FEET



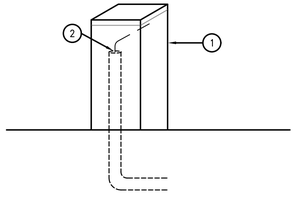
SITE KEY



KEYED NOTES: (#)

1. BARN WOOD ENCLOSURE TO CONCEAL PIPES (MUST BE APPROVED BY PARK SERVICE).
2. DUCT SEAL AFTER CABLE INSTALLATION.

2 CONDUIT ENCLOSURE DETAIL
SCALE: NTS



KEYED NOTES: (#)

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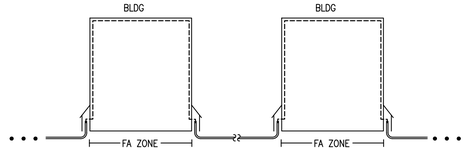
2. DUCT SEAL AFTER CABLE INSTALLATION.

3 CONDUIT ENCLOSURE DETAIL
SCALE: NTS



3 LINEAR HEAT DETECTION ONE LINE
SCALE: NTS

AG ENGINEERING
133 W. Spruce St.
Missoula, Montana 59802
ph: 406-829-8828
fax: 406-829-8829
project 17SOM01

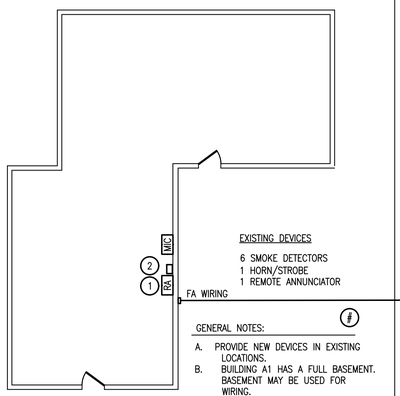
MONTANA
JONATHAN
GORANSON
No. 15037PE
LICENSED
PROFESSIONAL ENGINEER
04/27/2018

NO.	REVISIONS	DATE

BANNACK STATE PARK
FIRE ALARM SYSTEM UPGRADE
DILLON, MT
FWP #7176301

SCALE: SEE SCALE
DATE: DATE
DRAWN BY: INITIALS
SHEET NAME: NEW FA SYSTEM SITE PLAN - WEST

SHEET E1.30W



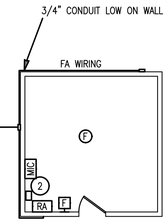
EXISTING DEVICES

6 SMOKE DETECTORS
1 HORN/STROBE
1 REMOTE ANNUNCIATOR

GENERAL NOTES:

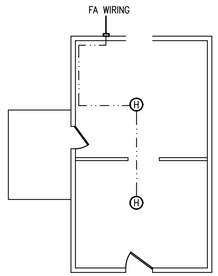
A. PROVIDE NEW DEVICES IN EXISTING LOCATIONS.
B. BUILDING A1 HAS A FULL BASEMENT. BASEMENT MAY BE USED FOR WIRING.
C. REPLACE ONE SMOKE DETECTOR WITH SMOKE/CO COMBO DETECTOR AND MOUNT OUTSIDE BEDROOM.

1 BUILDING A1-1
SCALE: 1/8" = 1'-0"



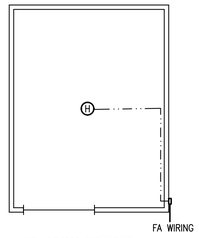
NEW DEVICES AND WIRING

2 BUILDING A1-2
SCALE: 1/8" = 1'-0"



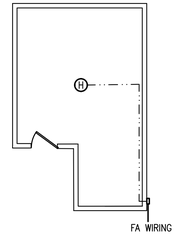
NEW DEVICES AND WIRING

3 BUILDING A1-3
SCALE: 1/8" = 1'-0"



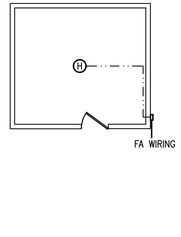
NEW DEVICES AND WIRING

4 BUILDING A1-1G
SCALE: 1/8" = 1'-0"



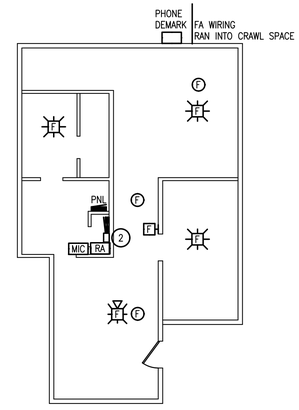
NEW DEVICES AND WIRING

5 BUILDING A1-4
SCALE: 1/8" = 1'-0"



NEW DEVICES AND WIRING

6 BUILDING YF2
SCALE: 1/8" = 1'-0"

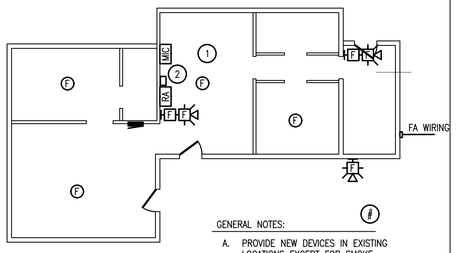


EXISTING DEVICES

3 SMOKE DETECTORS
2 PULL STATIONS
4 STROBES
1 REMOTE ANNUNCIATOR

LOCATION OF EXISTING DEVICES SHOWN. PROVIDE NEW DEVICES IN EXISTING LOCATIONS.

7 BUILDING A2
SCALE: 1/8" = 1'-0"



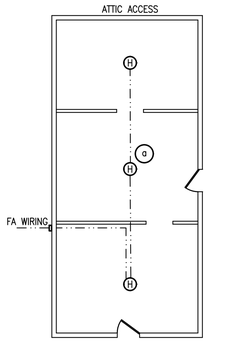
EXISTING DEVICES

4 SMOKE DETECTORS
2 PULL STATIONS
1 STROBE
1 HORN
1 REMOTE ANNUNCIATOR

GENERAL NOTES:

A. PROVIDE NEW DEVICES IN EXISTING LOCATIONS EXCEPT FOR SMOKE DETECTOR IN KITCHEN. REMOVE AND DO NOT REPLACE KITCHEN SMOKE DETECTOR; REMOVE ASSOCIATED WIRING.
B. OUTDOOR HORN/SIREN MUST BE WEATHERPROOF.
C. REPLACE ONE SMOKE DETECTOR WITH SMOKE/CO COMBO DETECTOR AND MOUNT OUTSIDE BEDROOM.

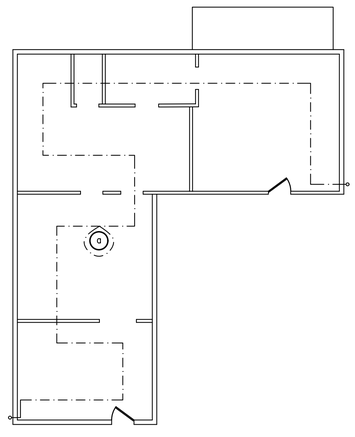
8 BUILDING A3
SCALE: 1/8" = 1'-0"



KEYED NOTES:

a. RUN WIRE IN ATTIC.

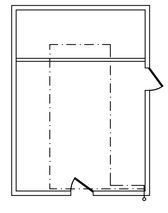
9 BUILDING A4
SCALE: 1/8" = 1'-0"



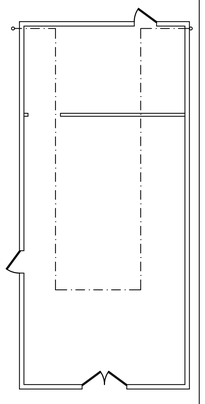
KEYED NOTES:

a. LOOP CABLE INTO ATTIC.

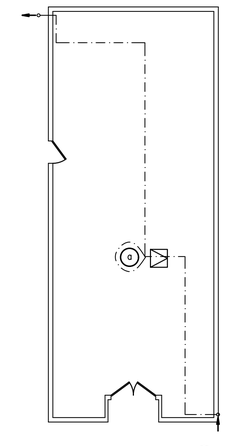
10 BUILDING A5-1
SCALE: 1/8" = 1'-0"



11 BUILDING A5-3
SCALE: 1/8" = 1'-0"



12 BUILDING A6
SCALE: 1/8" = 1'-0"



KEYED NOTES:

a. ATTIC ACCESS LOOP.

13 BUILDING A7-1
SCALE: 1/8" = 1'-0"

GENERAL NOTES: FOR SHEETS 2.10A-13A

A. WIRING FOR CONVENTIONAL ADDRESSABLE SYSTEMS TO BE CONCEALED IN ATTIC SPACES AS MUCH AS POSSIBLE. VERTICAL RUNS CAN BE TUCKED INTO INSIDE CORNERS. RUN WIRING IN INSIDE CORNERS, TUCKED IN BESIDE BEAMS, OR AROUND OTHER STRUCTURAL ELEMENTS WHERE WIRING CANNOT BE RUN IN ATTICS.

B. WHERE ATTIC LOOPS ARE CALLED OUT FOR LINEAR HEAT CABLE, PROVIDE AT LEAST 20' LOOP IN THE ATTIC SPACE. MANY OF THESE SPACES ARE NOT ACCESSIBLE AND THESE LOOPS WILL HAVE TO BE PLACED THROUGH EXISTING HOLES. CABLE SHOULD BE LAYED OUT IN A LOOP ON TOP OF THE CEILING JOISTS. THIS DOES NOT PROVIDE FULL ATTIC PROTECTION BUT ENHANCES THE BUILDING COVERAGE TO SOME DEGREE.

C. LINEAR HEAT CABLE VERTICAL RUNS SHALL BE RUN IN INSIDE CORNERS. THE SENSING AREAS OF THE CEILING SHALL HAVE CABLES RUN AT LEAST 4' OUT IN THE CEILINGS FROM THE CORNER.

D. REPLACEMENT OF CONVENTIONAL FIRE ALARM WIRING IS DESIRED WHEN FEASIBLE. REUSE ADDRESSABLE BUILDING BRANCH WIRING WHERE REPLACEMENT IS IMPRACTICAL.

KEYED NOTES: (#)

1. REPLACE ALL EXISTING ADDRESSABLE INTERIOR WIRING EXCEPT FOR A1-2 AND A2. REPLACE ALL DEVICES AND RA PANEL WITH NEW.
2. FIRE PUMP START/STOP PUSH BUTTON.

LEGEND

- ASPIRATING SMOKE DETECTION (ASD)
- LINEAR FIBER HEAT DETECTOR. RUN ON SURFACE INSIDE OF THE BUILDING. FASTEN WITH FACTORY FASTENERS AT EACH DIRECTION CHANGE AND AT 48" INTERVALS
- ASD POWER
- CONVENTIONAL FA WIRING

ENGINEERING
133 N. Spruce St.
Missoula, Montana 59802
ph: 406-829-8828
fax: 406-829-8829
project 17SOM01

MONTANA
JONATHAN A.
GORANSON
No. 15037PE
LICENSED
PROFESSIONAL ENGINEER

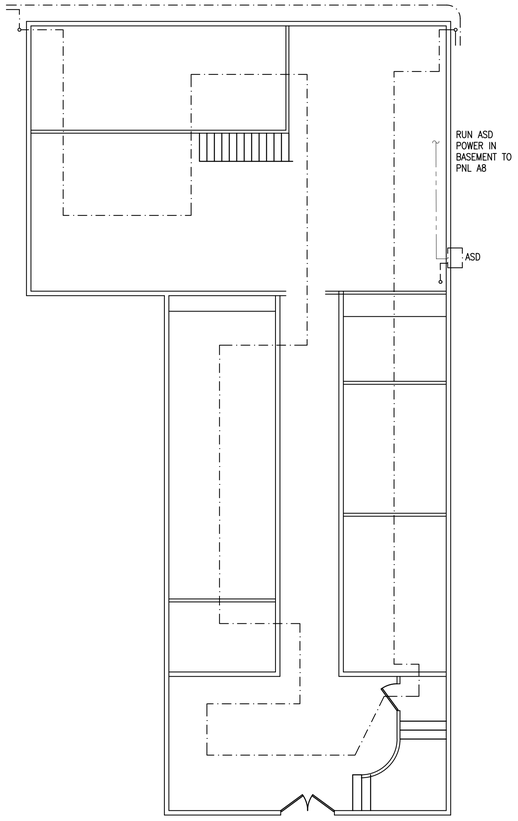
04/27/2018

NO.	REVISIONS	DATE

BANNACK STATE PARK
FIRE ALARM SYSTEM UPGRADE
DILLON, MT
FWP #7176301

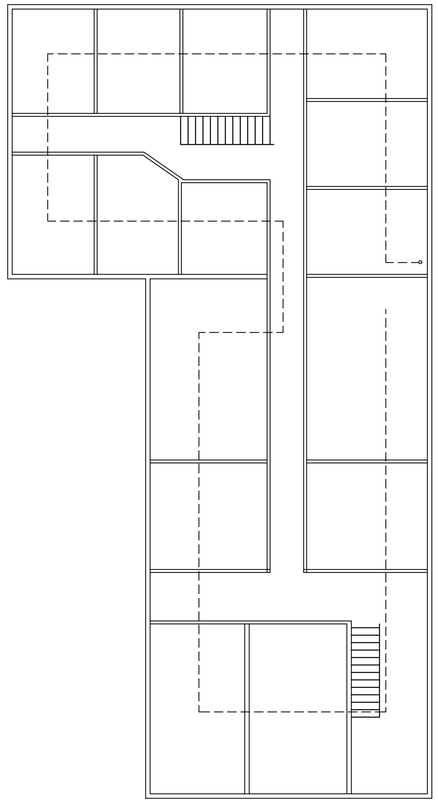
SCALE: SEE SCALE
DATE: DATE
DRAWN BY: INITIALS
SHEET NAME: ELECTRICAL PLANS BLDG A

SHEET: E2.10A

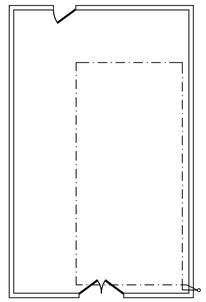


FIRST FLOOR
LINEAR HEAT DETECTION

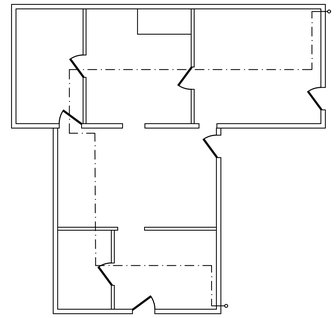
1 BUILDING A8
SCALE: 1/8" = 1'-0"



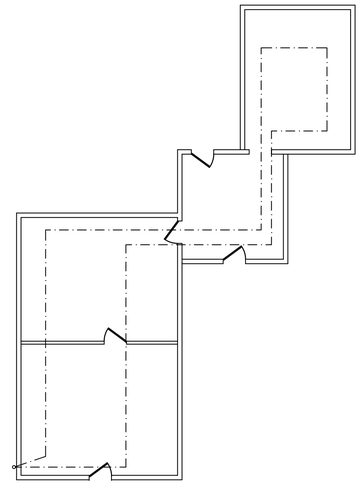
SECOND FLOOR
ASPIRATING SMOKE DETECTION



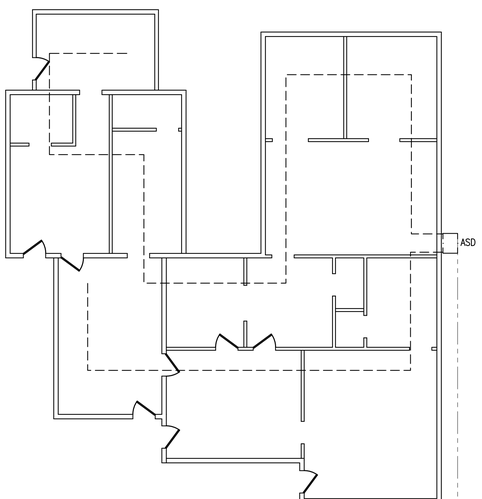
2 BUILDING A9
SCALE: 1/8" = 1'-0"



3 BUILDING A11
SCALE: 1/8" = 1'-0"

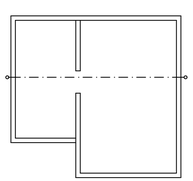


4 BUILDING A13
SCALE: 1/8" = 1'-0"

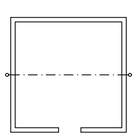


TO PNL B16-2
1"CONDUIT
(2) #10, (1)#10 GND

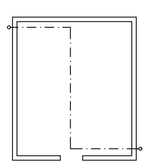
5 BUILDING A13-1
SCALE: 1/8" = 1'-0"



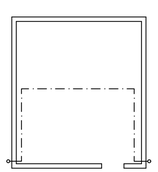
6 BUILDING A13-3
SCALE: 1/8" = 1'-0"



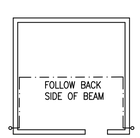
7 BUILDING A13-4
SCALE: 1/8" = 1'-0"



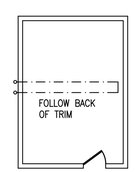
8 BUILDING A13-5
SCALE: 1/8" = 1'-0"



9 BUILDING A13-6
SCALE: 1/8" = 1'-0"



10 BUILDING A13-7
SCALE: 1/8" = 1'-0"



11 BUILDING A13-8
SCALE: 1/8" = 1'-0"

GENERAL NOTES: FOR SHEETS 2.10A-13A

A. WIRING FOR CONVENTIONAL ADDRESSABLE SYSTEMS TO BE CONCEALED IN ATTIC SPACES AS MUCH AS POSSIBLE. VERTICAL RUNS CAN BE TUCKED INTO INSIDE CORNERS. RUN WIRING IN INSIDE CORNERS, TUCKED IN BESIDE BEAMS, OR AROUND OTHER STRUCTURAL ELEMENTS WHERE WIRING CANNOT BE RUN IN ATTICS.

B. WHERE ATTIC LOOPS ARE CALLED OUT FOR LINEAR HEAT CABLE, PROVIDE AT LEAST 20' LOOP IN THE ATTIC SPACE. MANY OF THESE SPACES ARE NOT ACCESSIBLE AND THESE LOOPS WILL HAVE TO BE PLACED THROUGH EXISTING HOLES. CABLE SHOULD BE LAYED OUT IN A LOOP ON TOP OF THE CEILING JOISTS. THIS DOES NOT PROVIDE FULL ATTIC PROTECTION BUT ENHANCES THE BUILDING COVERAGE TO SOME DEGREE.

C. LINEAR HEAT CABLE VERTICAL RUNS SHALL BE RUN IN INSIDE CORNERS. THE SENSING AREAS OF THE CEILING SHALL HAVE CABLES RUN AT LEAST 4' OUT IN THE CEILINGS FROM THE CORNER.

D. REPLACEMENT OF CONVENTIONAL FIRE ALARM WIRING IS DESIRED WHEN FEASIBLE. REUSE ADDRESSABLE BUILDING BRANCH WIRING WHERE REPLACEMENT IS IMPRACTICAL.

KEYED NOTES:

1. REPLACE ALL EXISTING ADDRESSABLE INTERIOR WIRING EXCEPT FOR A1-2 AND A2. REPLACE ALL DEVICES AND RA PANEL WITH NEW.
2. FIRE PUMP START/STOP PUSH BUTTON.

LEGEND

- ASPIRATING SMOKE DETECTION (ASD)
- LINEAR FIBER HEAT DETECTOR. RUN ON SURFACE INSIDE OF THE BUILDING. FASTEN WITH FACTORY FASTENERS AT EACH DIRECTION CHANGE AND AT 48" INTERVALS
- ASD POWER
- CONVENTIONAL FA WIRING

DG ENGINEERING
1319 E. Spruce St.
Missoula, Montana 59802
ph: 406-829-6828
fax: 406-829-6829
project 17630101

MONTANA
JONATHAN A. GORRANSON
No. 15037PE
LICENSED PROFESSIONAL ENGINEER

04/27/2018

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DILLON, MT
FWP #7176301

SCALE: SEE SCALE
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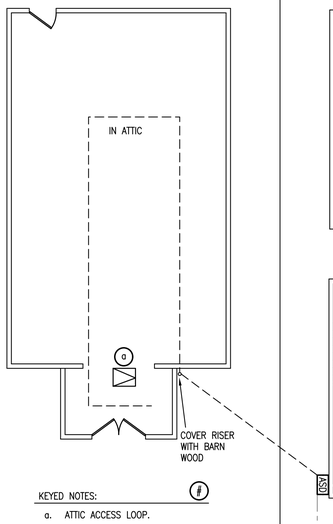
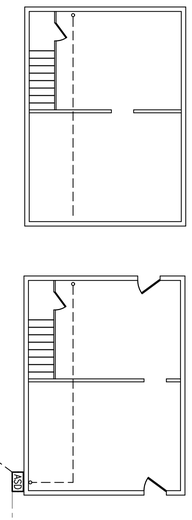
SHEET NAME: ELECTRICAL PLANS BLDG A

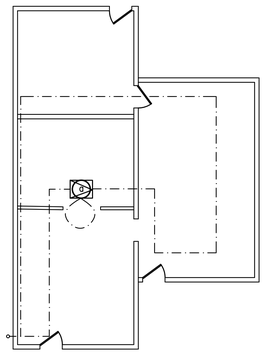
SHEET E2.11A



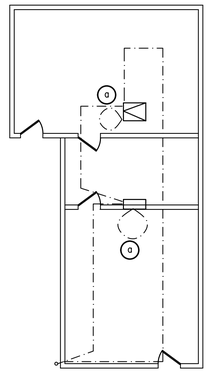
1 BUILDING A16
SCALE: 1/8" = 1'-0"



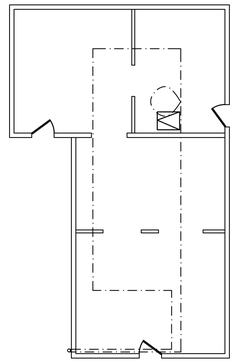
2 BUILDING A17-1
SCALE: 1/8" = 1'-0"



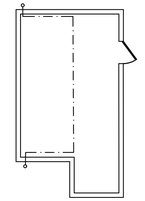
3 BUILDING A17-2
SCALE: 1/8" = 1'-0"



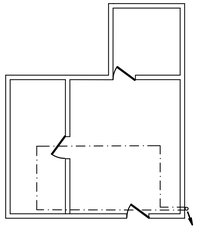
4 BUILDING A18
SCALE: 1/8" = 1'-0"



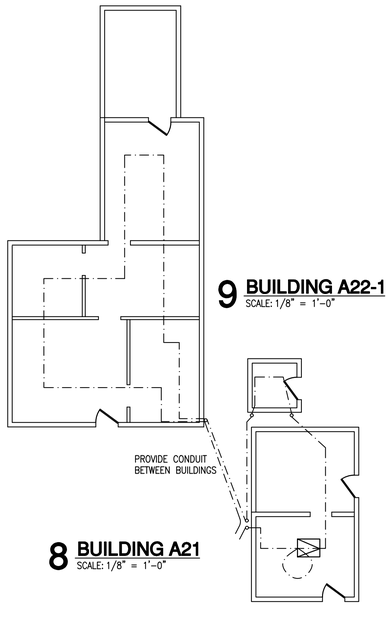
5 BUILDING A19-1
SCALE: 1/8" = 1'-0"



6 BUILDING A19-2
SCALE: 1/8" = 1'-0"

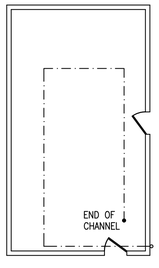


7 BUILDING A19-3
SCALE: 1/8" = 1'-0"

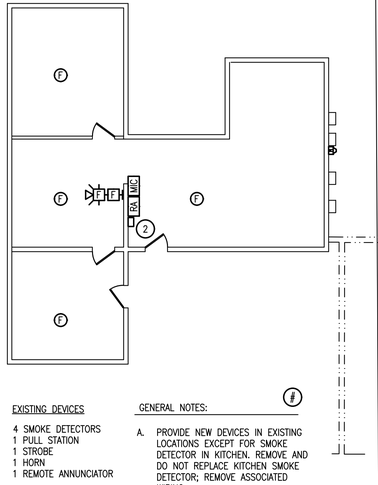


8 BUILDING A21
SCALE: 1/8" = 1'-0"

9 BUILDING A22-1
SCALE: 1/8" = 1'-0"



10 BUILDING A22-2
SCALE: 1/8" = 1'-0"



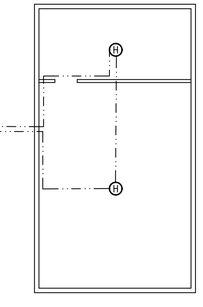
EXISTING DEVICES

4 SMOKE DETECTORS
1 PULL STATION
1 STROBE
1 HORN
1 REMOTE ANNUNCIATOR

GENERAL NOTES: #

A. PROVIDE NEW DEVICES IN EXISTING LOCATIONS EXCEPT FOR SMOKE DETECTOR IN KITCHEN. REMOVE AND DO NOT REPLACE KITCHEN SMOKE DETECTOR; REMOVE ASSOCIATED WIRING.
B. OUTDOOR HORN/SIREN MUST BE WEATHERPROOF.
C. REPLACE ONE SMOKE DETECTOR WITH SMOKE/CO COMBO DETECTOR AND MOUNT OUTSIDE BEDROOM.

11 BUILDING A23-1
SCALE: 1/8" = 1'-0"



12 BUILDING A23-2
SCALE: 1/8" = 1'-0"

GENERAL NOTES: FOR SHEETS 2.10A-13A

A. WIRING FOR CONVENTIONAL ADDRESSABLE SYSTEMS TO BE CONCEALED IN ATTIC SPACES AS MUCH AS POSSIBLE. VERTICAL RUNS CAN BE TUCKED INTO INSIDE CORNERS. RUN WIRING IN INSIDE CORNERS, TUCKED IN BESIDE BEAMS, OR AROUND OTHER STRUCTURAL ELEMENTS WHERE WIRING CANNOT BE RUN IN ATTICS.

B. WHERE ATTIC LOOPS ARE CALLED OUT FOR LINEAR HEAT CABLE, PROVIDE AT LEAST 20' LOOP IN THE ATTIC SPACE. MANY OF THESE SPACES ARE NOT ACCESSIBLE AND THESE LOOPS WILL HAVE TO BE PLACED THROUGH EXISTING HOLES. CABLE SHOULD BE LAYED OUT IN A LOOP ON TOP OF THE CEILING JOISTS. THIS DOES NOT PROVIDE FULL ATTIC PROTECTION BUT ENHANCES THE BUILDING COVERAGE TO SOME DEGREE.

C. LINEAR HEAT CABLE VERTICAL RUNS SHALL BE RUN IN INSIDE CORNERS. THE SENSING AREAS OF THE CEILING SHALL HAVE CABLES RUN AT LEAST 4' OUT IN THE CEILINGS FROM THE CORNER.

D. REPLACEMENT OF CONVENTIONAL FIRE ALARM WIRING IS DESIRED WHEN FEASIBLE. REUSE ADDRESSABLE BUILDING BRANCH WIRING WHERE REPLACEMENT IS IMPRACTICAL.

KEYED NOTES:

1. REPLACE ALL EXISTING ADDRESSABLE INTERIOR WIRING EXCEPT FOR A1-2 AND A2. REPLACE ALL DEVICES AND RA PANEL WITH NEW.
2. FIRE PUMP START/STOP PUSH BUTTON.

LEGEND

- ASPIRATING SMOKE DETECTION (ASD)
- LINEAR FIBER HEAT DETECTOR. RUN ON SURFACE INSIDE OF THE BUILDING. FASTEN WITH FACTORY FASTENERS AT EACH DIRECTION CHANGE AND AT 48" INTERVALS
- ASD POWER
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ENGINEERING
133 N. Spruce St.
Missoula, Montana 59802
ph: 406-529-8828
fax: 406-529-8829
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MONTANA JONATHAN A. GORANSON No. 15037PE LICENSED PROFESSIONAL ENGINEER

04/27/2018

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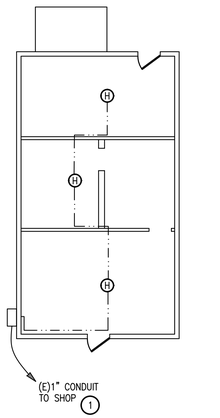
FIRE ALARM SYSTEM UPGRADE
DILLON, MT
FWP #7176301

SCALE: SEE SCALE
DATE: DATE
DRAWN BY: INITIALS
SHEET NAME: ELECTRICAL PLANS BLDG A

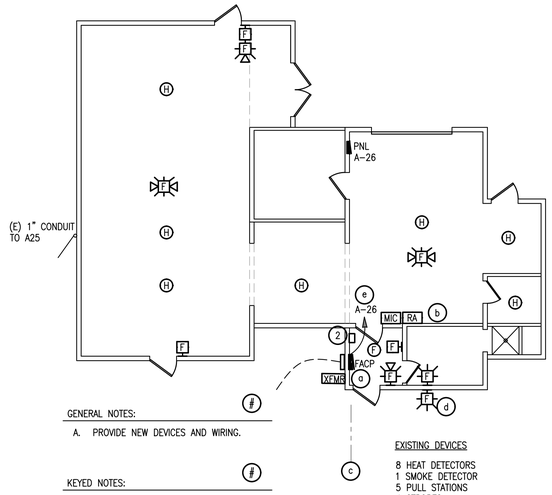
SHEET: E2.12A



KEYED NOTES:

1. PULL NEW FIRE ALARM WIRE FROM FACP TO A-25 EXISTISNG CONDUIT BETWEEN BUILDINGS.

1 BUILDING A25
SCALE: 1/8" = 1'-0"



GENERAL NOTES:

A. PROVIDE NEW DEVICES AND WIRING.

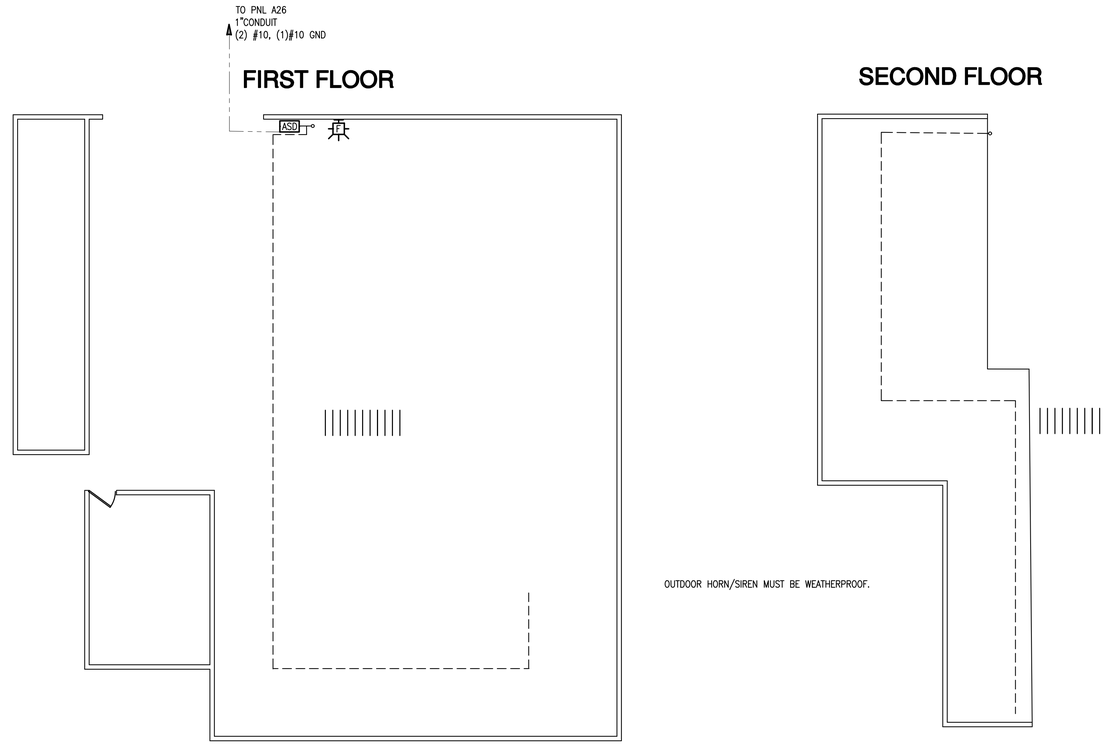
KEYED NOTES:

a. NEW FACP.
b. DISCONNECT AND REMOVE RA PANEL.
c. POWER TO MILL.
d. OUTDOOR HORN/SIREN MUST BE WEATHERPROOF.
e. PROVIDE 20A 120V CIRCUIT FROM PANEL A26.

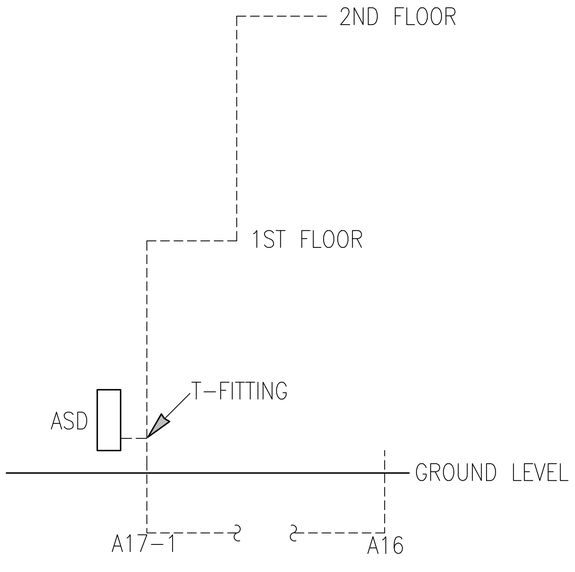
EXISTING DEVICES

8 HEAT DETECTORS
1 SMOKE DETECTOR
5 PULL STATIONS
4 STROBES
3 HORNS
1 REMOTE ANNUNCIATOR - (NOT NEEDED)

2 BUILDING A26
SCALE: 1/8" = 1'-0"



3 BUILDING A27
SCALE: 1/8" = 1'-0"



4 DETAIL FOR ASD TUBING A16 & A17-1
SCALE: 1/8" = 1'-0"

GENERAL NOTES: FOR SHEETS 2.10A-13A

A. WIRING FOR CONVENTIONAL ADDRESSABLE SYSTEMS TO BE CONCEALED IN ATTIC SPACES AS MUCH AS POSSIBLE. VERTICAL RUNS CAN BE TUCKED INTO INSIDE CORNERS. RUN WIRING IN INSIDE CORNERS, TUCKED IN BESIDE BEAMS, OR AROUND OTHER STRUCTURAL ELEMENTS WHERE WIRING CANNOT BE RUN IN ATTICS.

B. WHERE ATTIC LOOPS ARE CALLED OUT FOR LINEAR HEAT CABLE, PROVIDE AT LEAST 20' LOOP IN THE ATTIC SPACE. MANY OF THESE SPACES ARE NOT ACCESSIBLE AND THESE LOOPS WILL HAVE TO BE PLACED THROUGH EXISTING HOLES. CABLE SHOULD BE LAYED OUT IN A LOOP ON TOP OF THE CEILING JOISTS. THIS DOES NOT PROVIDE FULL ATTIC PROTECTION BUT ENHANCES THE BUILDING COVERAGE TO SOME DEGREE.

C. LINEAR HEAT CABLE VERTICAL RUNS SHALL BE RUN IN INSIDE CORNERS. THE SENSING AREAS OF THE CEILING SHALL HAVE CABLES RUN AT LEAST 4' OUT IN THE CEILINGS FROM THE CORNER.

D. REPLACEMENT OF CONVENTIONAL FIRE ALARM WIRING IS DESIRED WHEN FEASIBLE. REUSE ADDRESSABLE BUILDING BRANCH WIRING WHERE REPLACEMENT IS IMPRACTICAL.

KEYED NOTES:

1. REPLACE ALL EXISTING ADDRESSABLE INTERIOR WIRING EXCEPT FOR A1-2 AND A2. REPLACE ALL DEVICES AND RA PANEL WITH NEW.

2. FIRE PUMP START/STOP PUSH BUTTON.

LEGEND

- ASPIRATING SMOKE DETECTION (ASD)
- LINEAR FIBER HEAT DETECTOR. RUN ON SURFACE INSIDE OF THE BUILDING. FASTEN WITH FACTORY FASTENERS AT EACH DIRECTION CHANGE AND AT 48" INTERVALS
- ASD POWER
- CONVENTIONAL FA WIRING

AE ENGINEERING
133 W. Spruce St.
Missoula, Montana 59802
ph: 406-829-8828
fax: 406-829-8829
project 17SOM01

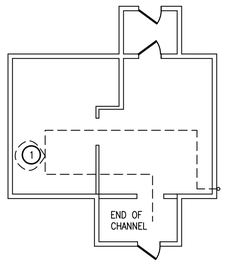
MONTANA
JONATHAN A. GORANSON
No. 15037PE
LICENSED PROFESSIONAL ENGINEER
04/27/2018

NO.	REVISIONS	DATE

BANNACK STATE PARK
FIRE ALARM SYSTEM UPGRADE
DILLON, MT
FWP #7176301

SCALE: SEE SCALE
DATE: DATE
DRAWN BY: INITIALS
SHEET NAME: ELECTRICAL PLANS BLDG A

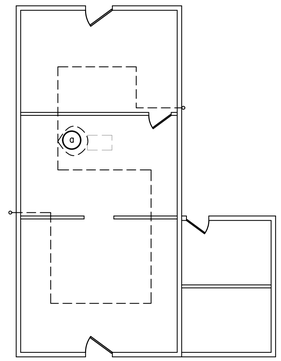
SHEET: E2.13A



KEYED NOTES: (#)

1. LOOP CABLE INTO ATTIC.
2.

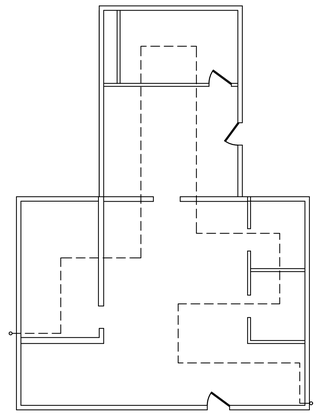
1 BUILDING B1
SCALE: 1/8" = 1'-0"



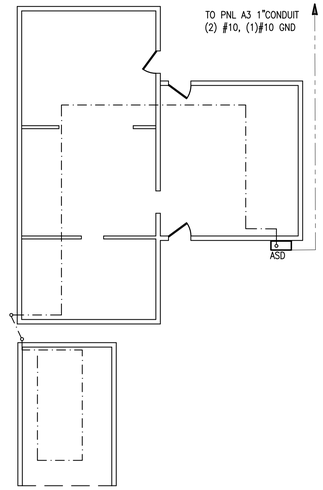
KEYED NOTES: (#)

a. LOOP CABLE INTO ATTIC.

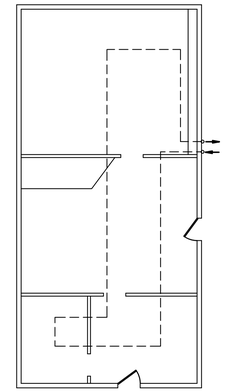
2 BUILDING B2
SCALE: 1/8" = 1'-0"



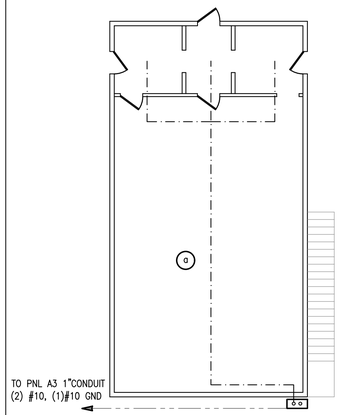
3 BUILDING B3-1
SCALE: 1/8" = 1'-0"



4 BUILDING B4-1
SCALE: 1/8" = 1'-0"

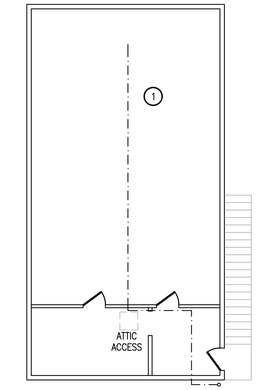


5 BUILDING B5-1
SCALE: 1/8" = 1'-0"



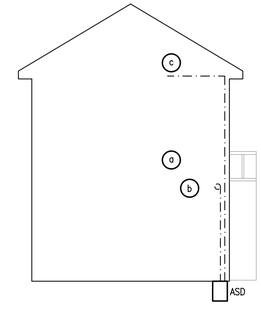
KEYED NOTES – FIRST FLOOR: (#)

1. PROVIDE WHITE PVC TUBING INSIDE OF THE ROOM



KEYED NOTES – 2ND FLOOR: (#)

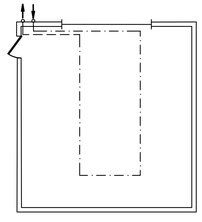
1. ALL PIPING IN ATTIC.



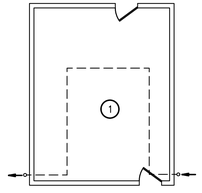
KEYED NOTES: (#)

a. BARN WOOD COVER ON THE BUILDING EXTERIOR.
b. ENTER BELOW INSIDE CEILING.
c. ENTER ABOVE INSIDE CEILING IN THE ATTIC.

6 BUILDING B6
SCALE: 1/8" = 1'-0"



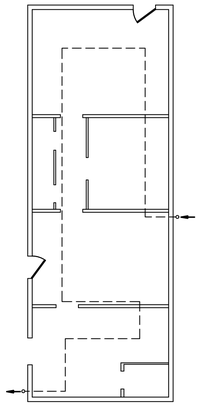
7 BUILDING B5-4
SCALE: 1/8" = 1'-0"



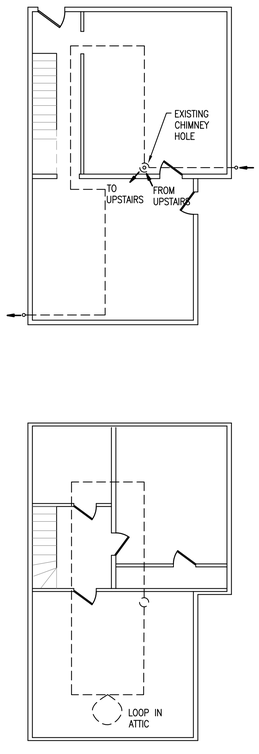
KEYED NOTES: (#)

1. LOOP CABLE INTO ATTIC.

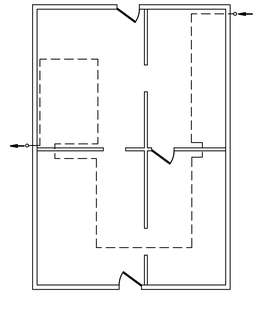
8 BUILDING B7
SCALE: 1/8" = 1'-0"



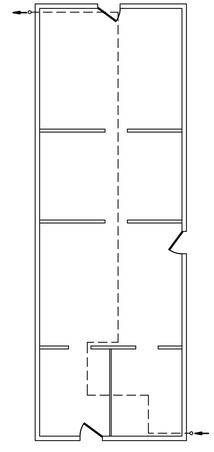
9 BUILDING B8
SCALE: 1/8" = 1'-0"



10 BUILDING B9
SCALE: 1/8" = 1'-0"



11 BUILDING B10
SCALE: 1/8" = 1'-0"



12 BUILDING B11
SCALE: 1/8" = 1'-0"

LEGEND

- ASPIRATING SMOKE DETECTION (ASD)
  - SAMPLING TUBE
- LINEAR FIBER HEAT DETECTOR. RUN ON SURFACE INSIDE OF THE BUILDING. FASTEN WITH FACTORY FASTENERS AT EACH DIRECTION CHANGE AND AT 48" INTERVALS
- ASD POWER

ENGINEERING
133 N. Higgins Ave.
Missoula, Montana 59802
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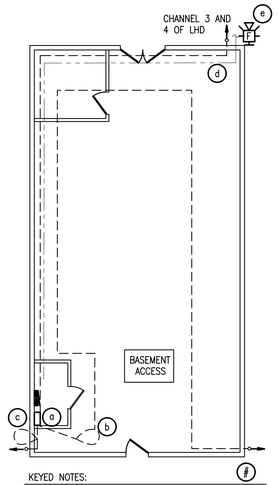
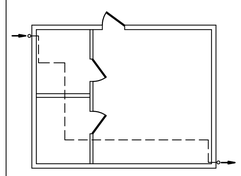
SHEET: E2.10B



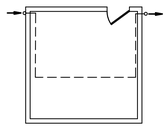
KEYED NOTES:

a. LINEAR FIBER HEAT DETECTOR SOURCE (LHD).
b. 80' COIL IN BASEMENT.
c. 40' COIL IN BASEMENT.
d. POWER ROUTED IN BASEMENT.
e. HORN/SIREN MUST BE WEATHERPROOF.

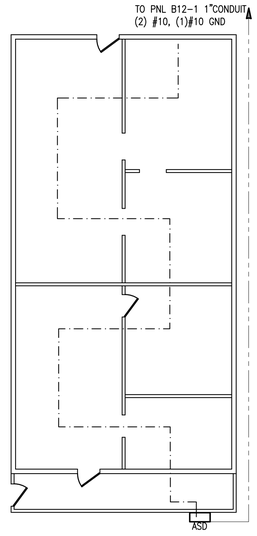
1 BUILDING B12-1
SCALE: 1/8" = 1'-0"



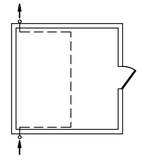
2 BUILDING B12-2
SCALE: 1/8" = 1'-0"



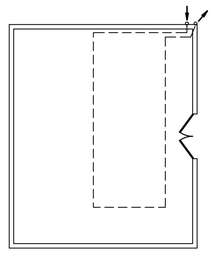
3 BUILDING B12-3
SCALE: 1/8" = 1'-0"



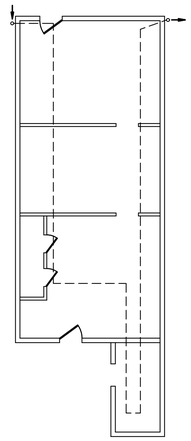
4 BUILDING B13-1
SCALE: 1/8" = 1'-0"



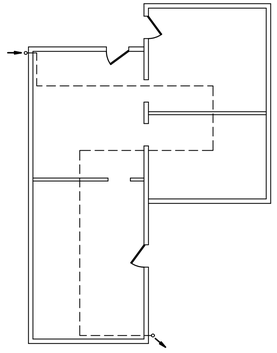
5 BUILDING B13-2
SCALE: 1/8" = 1'-0"



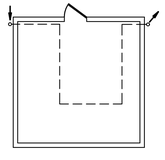
6 BUILDING B13-3
SCALE: 1/8" = 1'-0"



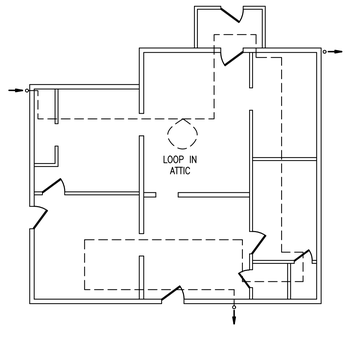
7 BUILDING B14
SCALE: 1/8" = 1'-0"



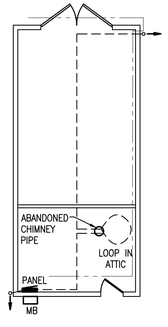
8 BUILDING B15-1
SCALE: 1/8" = 1'-0"



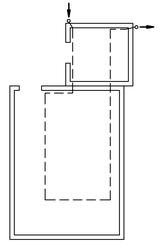
9 BUILDING B15-2
SCALE: 1/8" = 1'-0"



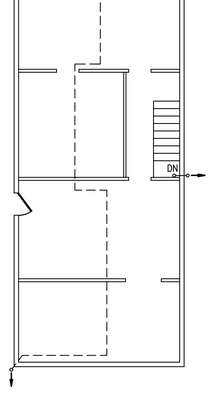
10 BUILDING B16-1
SCALE: 1/8" = 1'-0"



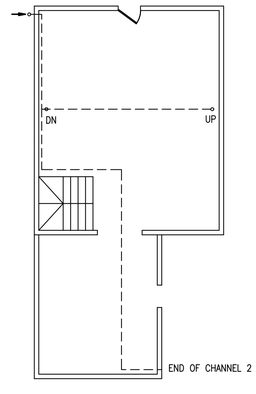
11 BUILDING B16-2
SCALE: 1/8" = 1'-0"



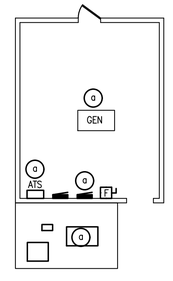
12 BUILDING B16-3
SCALE: 1/8" = 1'-0"



13 BUILDING B17
SCALE: 1/8" = 1'-0"



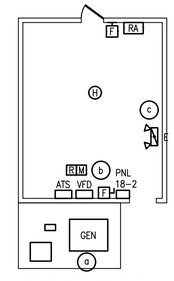
14 BUILDING B18-1
SCALE: 1/8" = 1'-0"



KEYED NOTES:

a. DEMO ATS, MOTOR STARTER, GENERATOR AND ADD-A-PHASE UNIT.

DEMO



REFER TO DETAIL 2 SHEET E5.10.

KEYED NOTES:

a. SUPPLY NEW SINGLE PHASE GENERATOR.
b. SUPPLY NEW VFD AND ATS.
c. SUPPLY LITHONIA ELA AFNR B FWD. CONNECT TO LIGHTING CIRCUIT.

NEW INSTALL

15 BUILDING B18-2
SCALE: 1/8" = 1'-0"

GENERAL NOTES: FOR SHEETS 2.10B-11B

A. WIRING FOR CONVENTIONAL ADDRESSABLE SYSTEMS TO BE CONCEALED IN ATTIC SPACES AS MUCH AS POSSIBLE. VERTICAL RUNS CAN BE TUCKED INTO INSIDE CORNERS. RUN WIRING IN INSIDE CORNERS, TUCKED IN BESIDE BEAMS, OR AROUND OTHER STRUCTURAL ELEMENTS WHERE WIRING CANNOT BE RUN IN ATTICS.

B. WHERE ATTIC LOOPS ARE CALLED OUT FOR LINEAR HEAT CABLE, PROVIDE AT LEAST 20' LOOP IN THE ATTIC SPACE. MANY OF THESE SPACES ARE NOT ACCESSIBLE AND THESE LOOPS WILL HAVE TO BE PLACED THROUGH EXISTING HOLES. CABLE SHOULD BE LAYED OUT IN A LOOP ON TOP OF THE CEILING JOISTS. THIS DOES NOT PROVIDE FULL ATTIC PROTECTION BUT ENHANCES THE BUILDING COVERAGE TO SOME DEGREE.

C. LINEAR HEAT CABLE VERTICAL RUNS SHALL BE RUN IN INSIDE CORNERS. THE SENSING AREAS OF THE CEILING SHALL HAVE CABLES RUN AT LEAST 4' OUT IN THE CEILINGS FROM THE CORNER.

D. REPLACEMENT OF CONVENTIONAL FIRE ALARM WIRING IS DESIRED WHEN FEASIBLE. REUSE ADDRESSABLE BUILDING BRANCH WIRING WHERE REPLACEMENT IS IMPRACTICAL.

LEGEND

- ASPIRATING SMOKE DETECTION (ASD)
  - SAMPLING TUBE
- LINEAR FIBER HEAT DETECTOR. RUN ON SURFACE INSIDE OF THE BUILDING. FASTEN WITH FACTORY FASTENERS AT EACH DIRECTION CHANGE AND AT 48" INTERVALS
- ASD POWER

ENGINEERING
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Missoula, Montana 59802
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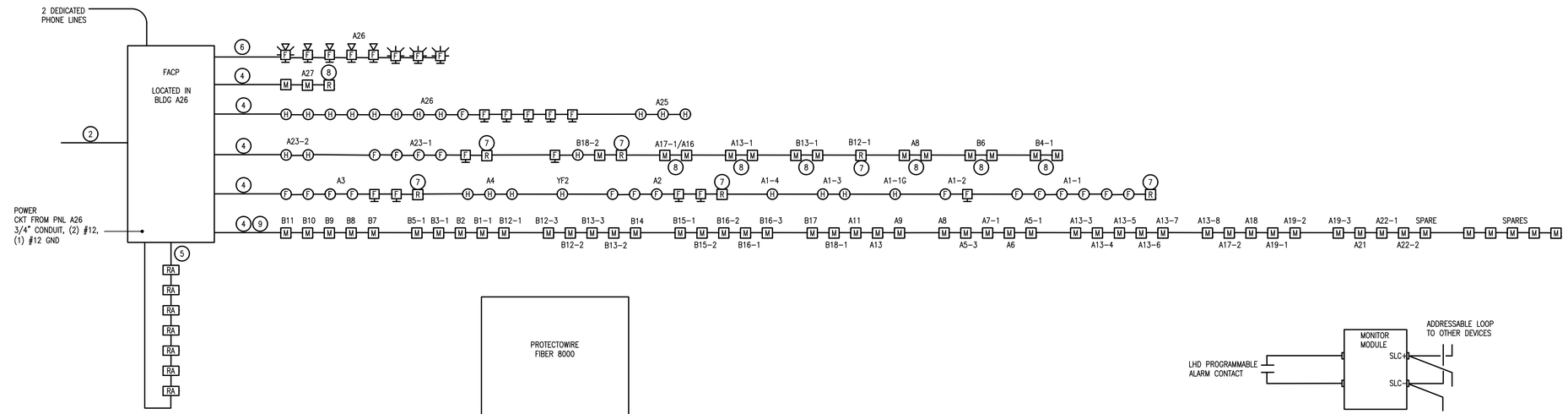
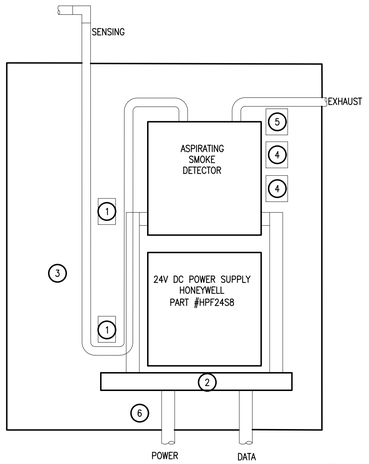


KEYED NOTES: (#)

1. SIZE WIRE AS PER VOLTAGE DROP REQUIREMENTS.
2. COMMUNICATION ETHERNET CABLE TO LINEAR HEAT DETECTOR MODULE.
3. ADDRESSABLE RELAY MODULE.
4. SIGNAL LINE CIRCUIT (ADDRESSABLE). PLENUM RATED 14 AWG TWISTED/NON-SHEILDED.
5. COMMUNICATION AND POWER WIRE TO REMOTE ANNUNCIATOR. 18 AWG TWISTED/SHEILDED PAIR 2 CONDUCTOR CABLE FOR RA COMMUNICATION. QUANTITY (2) 14 AWG 4 CONDUCTOR CABLE FOR RA POWER AND REMOTE START/STOP FOR FIRE PUMP.
6. INDICATING CIRCUIT.
7. REFER TO DETAIL 5.
8. REFER TO DETAIL 2 AND 6.
9. LINEAR HEAT DETECTION MONITOR RELAYS FOUND IN B12-1.

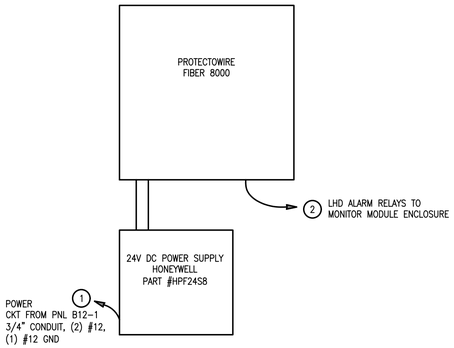
1 FIRE ALARM SYSTEM RISER DIAGRAM
SCALE: NTS



KEYED NOTES: (#)

1. STEGO CABINET HEATER (100W) #060110-00 WITH T-STAT. PROVIDE DINRAIL MOUNTING.
2. 2" x 2" PANDUIT WIRE MANAGEMENT.
3. 42 x 36 x 17 NEMA 4X HINGED COVER ENCLOSURE. 1" INSULATION (R8). SIGNATURE ENCLOSURE PART # SE423617FSSD W/1" INSULATION.
4. FIRE ALARM MONITOR MODULES. REFER TO DETAIL 6.
5. FIRE ALARM RELAY MODULE. MILL ASD ONLY. REFER TO DETAIL 6.
6. QTY 2 BAT-12180. 12VDC 18AH BATTERIES NOT SHOWN. MOUNTED ON INSIDE BOTTOM OF PANEL. CONNECT TO POWER SUPPLY.

2 ASD (ASPIRATING SMOKE DETECTOR)
SCALE: NTS

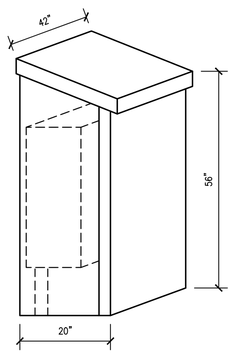


KEYED NOTES: (#)

MOUNT IN HEATED CLOSET IN BUILDING B12-1".

1. 120V CIRCUIT FROM EXISTING PANEL.
2. SEE DETAIL 8.

3 FIBER OPTIC LINEAR HEAT DETECTOR
SCALE: NTS

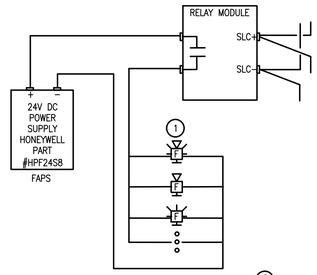


GENERAL NOTES: (#)

A. BARN WOOD ENCLOSURE TO CONCEAL PIPES (MUST BE APPROVED BY PARK SERVICE).

B. DUCT SEAL PIPES AFTER CABLE INSTALLATION.

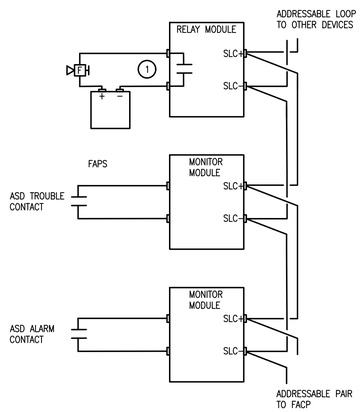
4 LIFT OFF BARNWOOD COVER FOR ASD ENCLOSURE
SCALE: NTS



KEYED NOTES: (#)

1. ALL INDICATING DEVICES WITHIN BUILDING WIRED IN PARALLEL BETWEEN OUTPUT OF RELAY NORMALLY OPEN CONTACTS AND FAPS.

5 REMOTE INDICATING CIRCUIT
SCALE: NTS



KEYED NOTES: (#)

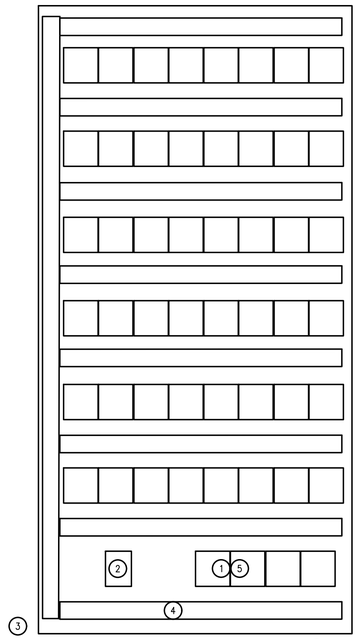
1. RELAY OUTPUT FOR INDICATING DEVICE (MILL ASD ONLY)

6 ASD MONITOR & RELAY MODULE
SCALE: NTS

KEYED NOTES: (#)

1. RELAY OUTPUT FOR INDICATING DEVICE.

7 LHD MONITOR MODULE DETAIL
SCALE: NTS

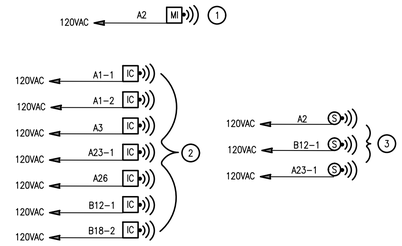


KEYED NOTES: (#)

1. MONITOR MODULE (QTY 52).
2. TERMINAL BLOCKS (QTY 4) FOR CONNECTING SLC.
3. 36" X 72" X 12" HINGED DOOR NEMA 12 ENCLOSURE.
4. PANDUIT 2" WIRE MANAGEMENT.
5. SEE DETAIL 7.

8 LHD TO SLC MONITOR MODULE ENCLOSURE
SCALE: NTS

LOCATED IN BLDG B12-1 HEATED ROOM.



GENERAL NOTES:

A. CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL ADDITIONAL REPEATERS AND TRANSMITTERS REQUIRED.

B. CONTRACTOR IS RESPONSIBLE FOR RUNNING POWER FROM BUILDING PANEL TO SPEAKER CONTROLLER AND PAGING DEVICES.

C. CONTRACTOR MUST COORDINATE WITH PARK MANAGEMENT ON LOCATIONS FOR ALL EQUIPMENT INSTALLED OUTSIDE.

KEYED NOTES: (#)

1. WIRELESS PAGING BASE STATION; VISIPLEX VS4500
2. WIRELESS INTERCOM LOCATION NEAR REMOTE ANNUNCIATIOR LOCATION; VISIPLEX VNS2212.
3. WIRELESS WEATHERPROOF SPEAKER. VISIPLEX VNS2214-8

9 INTERCOM / PA SYSTEM DETAIL
SCALE: NTS

DG ENGINEERING
133 N. Spruce St.
Missoula, Montana 59802
ph: 406-529-8828
fax: 406-529-8827
project 17SOM01

MONTANA JONATHAN A. GORANSON No. 15037PE LICENSED PROFESSIONAL ENGINEER

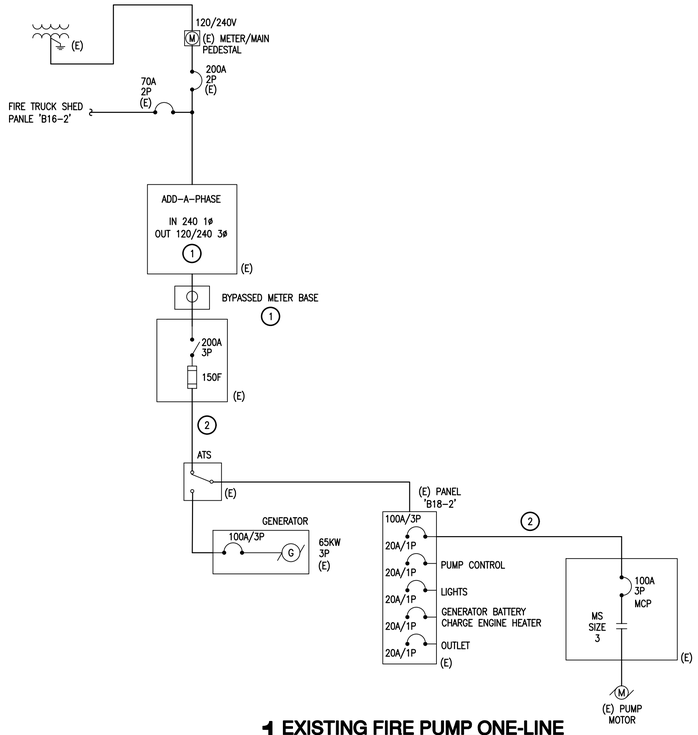
04/27/2018

NO.	REVISIONS	DATE

BANNACK STATE PARK
FIRE ALARM SYSTEM UPGRADE
DILLON, MT
FWP #7176301

SCALE: SEE SCALE
DATE: DATE
DRAWN BY: INITIALS
SHEET NAME: ELECTRICAL DIAGRAMS

SHEET E5.00

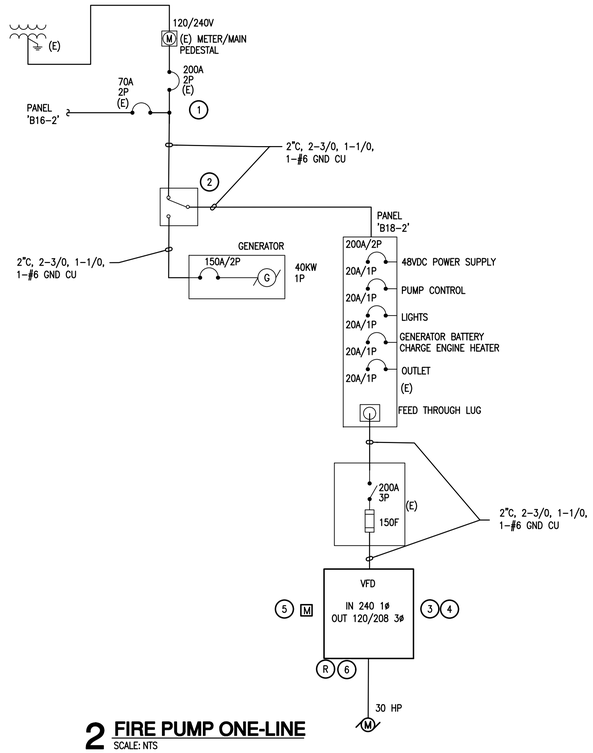


1 EXISTING FIRE PUMP ONE-LINE

SCALE: NTS

KEYED NOTES: (#)

1. REMOVE EQUIPMENT.
2. CONDUIT AND WIRE TO BE REPLACED.



2 FIRE PUMP ONE-LINE

SCALE: NTS

KEYED NOTES: (#)

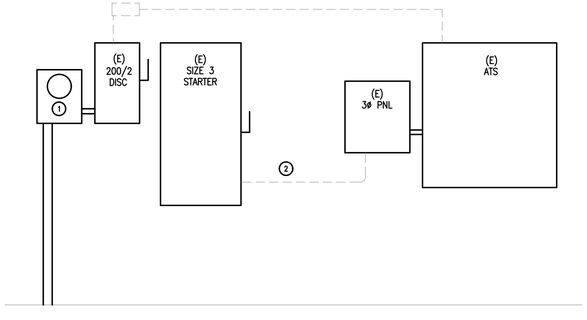
1. RUN 2" CONDUIT TO BUILDING FROM THE METER/MAIN WITH 2-250KCM, 1-3/0, 1-#4 GND AL.
2. 200A 2P TRANSFER SWITCH.
3. VFD MUST BE INSTALLED WITH AN INPUT EMC FILTER AND LINE REACTOR.
4. VFD MUST BE INSTALLED IN HEATED ENCLOSURE. DESIGN IS SPECIFIED WITH PARTS: ABB ACS550-U1-178-2, HOFFMAN WF75LP ENCLOSURE, A48P36 PANEL, AND (QTY 2) DAH4002B ENCLOSURE HEATER.
5. MONITOR MODULE CONNECTED TO VFD FOR FAULT STATUS.
6. RELAY CONNECTED TO DIGITAL INPUT FOR RUN COMMAND.

GENERAL NOTES:

1. AS THE SYSTEM SETS IT DOES NOT MEET NEC 695 FOR FIRE PUMPS NOR CAN IT BE MADE TO COMPLY BECAUSE NEC 695 DOES NOT ALLOW PHASE CONVERTERS IN FIRE PUMP CIRCUITS. THE MODIFICATION MADE HERE IS UPGRADING THE UTILITY SOURCE AND CONTROLS. OUR UNDERSTANDING IS THAT THE PUMP SUPPLIES HYDRANTS FOR PROTECTION OF UNOCCUPIED BUILDINGS AND THUS IS NOT A LEGALLY REQUIRED SYSTEM.
2. LOCATED IN BLDG B18-2
3. IN THE SCENARIO WHERE THERE IS A LOSS OF UTILITY POWER AND FIRE ALARM NOT ACTIVE, THE GENERATOR WILL NOT START AUTOMATICALLY. IN THE CASE WHERE THE OUTDOOR TEMPERATURE IS BELOW FREEZING, IT IS RECOMMENDED THAT THE GENERATOR BE STARTED AND RAN PERIODICALLY. THIS IS TO KEEP THE MOTOR AND VFD ENCLOSURE AT AN ABOVE FREEZING TEMPERATURE.

SEQUENCE OF OPERATION:

1. UTILITY POWER HEALTHY / FIRE ALARM ACTIVE OR NOT ACTIVE
   a. VFD IS ON (POWERED BY UTILITY) AND IS READY TO ACCEPT FIRE PUMP RUN COMMAND FROM LOCAL OR REMOTE LOCATIONS.
2. UTILITY POWER NOT HEALTHY / FIRE ALARM NOT ACTIVE
   a. VFD IS TURNED OFF. GENERATOR WILL NOT START AUTOMATICALLY. GENERATOR CAN BE STARTED MANUALLY FOR MAINTENANCE PURPOSES.
3. UTILITY POWER NOT HEALTHY / FIRE ALARM ACTIVE
   a. GENERATOR STARTS RUNNING AUTOMATICALLY.
   b. VFD IS TURNED ON AND IS READY TO ACCEPT FIRE PUMP RUN COMMAND FROM LOCAL OR REMOTE LOCATIONS.
4. RUNNING FIRE PUMP, VFD POWERED BY UTILITY THEN LOSS OF UTILITY POWER/FIRE ALARM ACTIVE.
   a. GENERATOR STARTS RUNNING AUTOMATICALLY.
   b. VFD IS TURNED BACK ON AND IS READY TO ACCEPT FIRE PUMP RUN COMMAND FROM LOCAL OR REMOTE LOCATIONS.
   c. NOTE! DURING A SCENARIO WHERE PERSONNEL IS FIGHTING A FIRE AND THERE IS A LOSS OF UTILITY POWER, SOMEONE WILL NEED TO RE-START THE PUMP VIA ANY LOCAL OR REMOTE LOCATIONS.

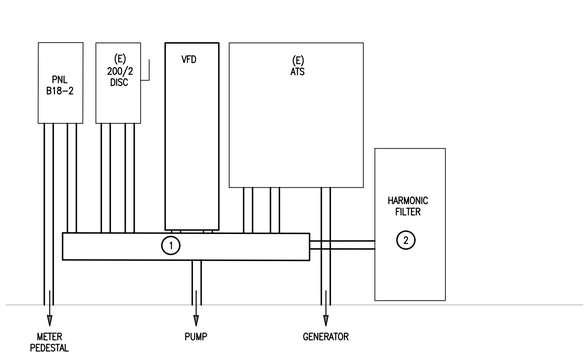


3 EXISTING ELECTRICAL ELEVATION

SCALE: NTS

KEYED NOTES: (#)

1. REMOVE OLD METER BASE.
2. REMOVE CONDUIT AND WIRE

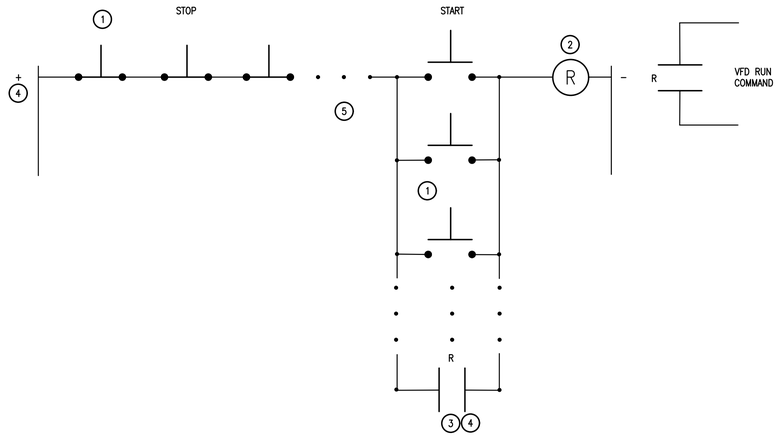


4 NEW ELECTRICAL ELEVATION

SCALE: NTS

KEYED NOTES: (#)

1. 8"X 8" SCREW COVER GUTTER
2. REMOVE SECTION OF WORK BENCH FOR PLACEMENT AND WORKING SPACE OF HARMONIC FILTER. PROVIDE MTE MATRIX ONE HARMONIC FILTER MSW0180A OR EQUIVALENT PART.



5 REMOTE START/STOP DETAIL

SCALE: NTS

KEYED NOTES: (#)

1. START/STOP PUSH BUTTONS LOCATED AT ALL REMOTE ANNUNCIATOR LOCATIONS. TYPICAL OF 8, SEE SHEETS E1.20E AND E1.20W. SQUARE D #9001BF201
2. RELAY CONNECTED TO VFD DIGITAL INPUT FOR RUN SIGNAL.
3. 48VDC DPDT CUBE RELAY.
4. RELAY AND POWER SUPPLY LOCATED IN FIRE PUMP ROOM.
5. USE 14AWG STRANDED WIRE FOR ALL WIRING.

ENGINEERING
133 N. Higgins Ave.
Missoula, Montana 59802
ph: 406-829-8828
fax: 406-829-8829
project
175KM01

MONTANA
JONATHAN A. GORANSON
No. 15037PE
LICENSED PROFESSIONAL ENGINEER
04/27/2018

NO.	REVISIONS	DATE

BANNACK STATE PARK
FIRE ALARM SYSTEM UPGRADE
DILLON, MT
FWP #7176301

SCALE: SEE SCALE
DATE: DATE
DRAWN BY: INITIALS
SHEET NAME: FIRE PUMP ONE-LINE DIAGRAMS

SHEET: E5.10